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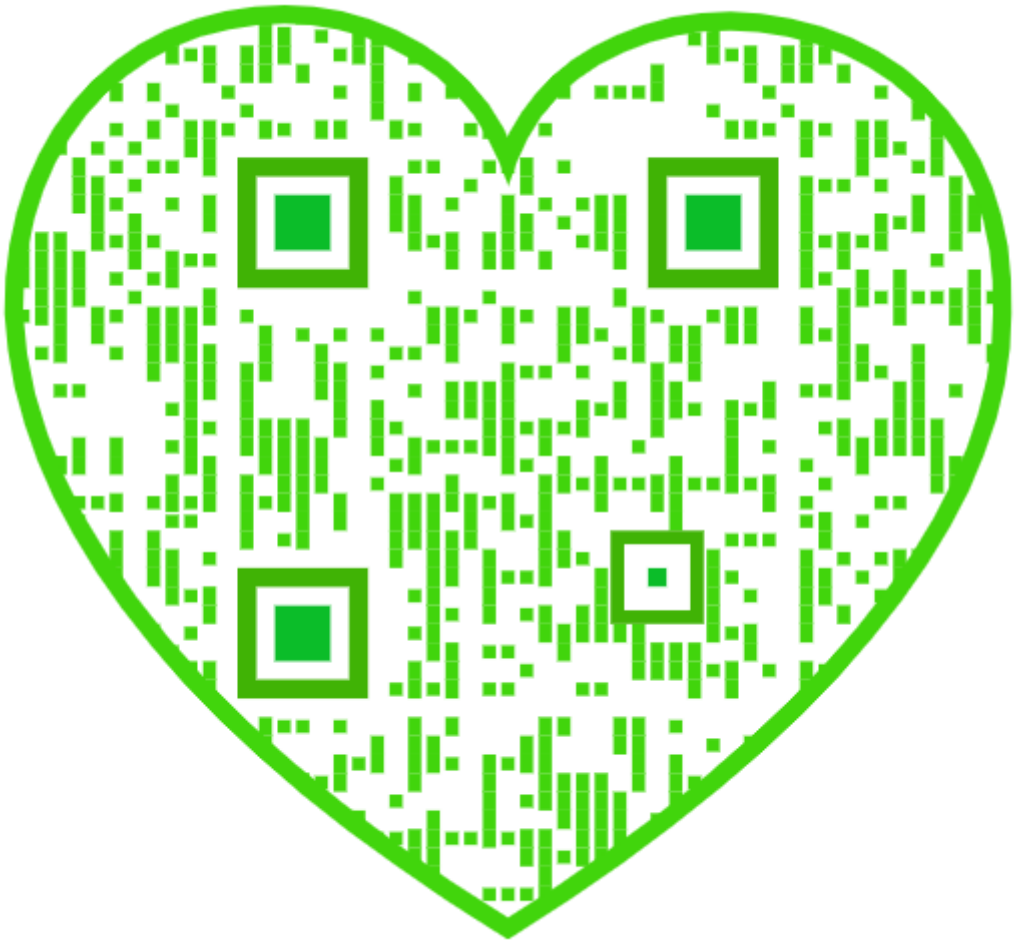

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The JOHN J. and HANNA M. McMANUS and MORRIS N. and CHESLEY V. YOUNG Collection
Gift—Oct. 12, 1955

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ELECTROTYPERS AND STEREOTYPERS.
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THE PLAY ROOM.

A RAINY HOLIDAY! what a dampness the very idea flings over many a young heart! A holiday when the rain comes steadily, perseveringly, obstinately down—drip, drip, drip!—without a chance of its holding up until the sun has gone down, and it's time to go back to school; when there's no chance of getting out to stroll or run, and all knowledge of out-door games is, for the time being, utterly useless and unprofitable; when perhaps you have half a dozen youngsters come to spend with you the holiday you have obtained to celebrate your birthday, or Christmas, or some other festive occasion; and each of you, under the necessity of keeping in-doors out of the rain, feels as much like a fish out of water as a catfish in a ball-room. Then is the time when an acquaintance with play-room games becomes really valuable; and the person who can impart such knowledge appears as that most welcome of all benefactors, "a friend in need." In this character we, the editor of the present treatise, mean to appear; for do we not devote the following pages to play-room games, and ought we not thereby to be considered as having established a title to the permanent gratitude of our young readers, one and all? We should rather think so.

BLIND-MAN'S-BUFF

Consists in one persons having a handkerchief bound over his eyes so as to completely blind him, and thus blindfolded trying to chase the other players, either by the sound of their footsteps, or their subdued merriment, as they

scramble away in all directions, endeavoring to avoid being caught by him; when he can manage to catch one, the player caught must in turn be blinded, and the game be begun again. In some places it is customary for one of the players to inquire of Buff (before the game begins), "How many horses has your father got?" to which inquiry he responds, "Three." "What colors are they?" "Black, white, and gray." The questioner then desires Buff to "turn round three times, and catch whom you may," which request he complies with, and then tries to capture one of the players. It is often played by merely turning the blindfolded hero round and round without questioning him, and then beginning. The handkerchief must be tied on fairly, so as to allow no little holes for Buffy to see through. In Europe they have a modified way of playing at blind-man's-buff, which, though less jolly than our American method, may be followed with advantage on birthdays and holidays, when boys and girls are dressed in their best, and careful parents are averse to rough clothes-tearing play. The party are not scattered here and there over the ground, but take hands and form a circle. In the midst stands Mr. Buff, blindfolded, and with a short thin stick in his hand. The players keep running round in a circle, generally singing, while Buff approaches gradually, guided mostly by their voices, till he manages to touch one of the twirling circle with his stick. Then the dance stops, and the dancers become motionless and silent. The player who has been touched must take the end of the stick in her hand, while Buff holds the other; and she must distinctly repeat three times after him, any word he chooses to name—"Good morning" or "Good night," for instance; of course, disguising his or her voice as much as possible. The blind man tries to guess the name of his captor by the voice. If he succeeds, the person caught becomes blind man; if not, Buff must try his luck again.

HOW D'YE LIKE YOUR NEIGHBOR?

The company must be seated in a circle round the room, with a clear space in the middle. The chairs are placed close together, and the number of chairs is one less than that of the players; for instance, if thirteen players, twelve chairs. The chairless person stands in the middle of the room, and addressing one of the company, says, "Master Jones, how do you like your neighbor?" Jones may either answer, "Very well indeed;" or, singling out two of the company, he may say, "I prefer Master A. to Miss B.," or "Miss A. to Mr. R." If, being of a contented disposition, he likes both his neighbors "very much indeed," all the players must change places; if, on the contrary, he prefers Master A. to Miss B., the two whom he names must change, the others sitting still; in either case it is the object of the person in the middle to get into one of the vacant chairs while the changing is going on; and if he can succeed in doing this, the person thus left seatless must stand in the middle, and ask the players how they like their neighbors; if not, the first player has to take up his position in the centre again, and the game goes on.

ONE OLD OX OPENING OYSTERS.

This is a capital round game, and will tax the memory and the gravity of the youngsters. The company being seated, the fugleman says, "*One old ox opening oysters,*" which each must repeat in turn with perfect gravity. Any one who indulges in the slightest giggle is mulcted of a forfeit forthwith. When the first round is finished, the fugleman begins again:—"*Two toads, totally tired, trying to trot to Troy;*" and the others repeat in turn, each separately, "*One old ox opening oysters; Two toads, totally tired,*" &c. The third round is, "*Three tawny tigers tickling trout,*" and the round recommences:—"*One old ox,* &c.; *Two toads, totally,* &c.; *Three tawny tigers,* &c." The fourth round, and up to the twelfth and last, given out by the fugleman successively, and repeated by the other players, are as follows:—"*Four fat friars fanning a fainting fly; Five fair flirts flying to France for fashions; Six Scotch salmon selling six sacks of sour-krout; Seven small soldiers successfully shooting snipes; Eight elegant elephants embarking for Europe; Nine nimble noblemen nibbling nonpareils; Ten tipsy tailors teasing a titmouse; Eleven early earwigs eagerly eating eggs;* and *Twelve twittering tomtits on the top of a tall tottering tree.*" Any mistake in repeating this legend, or any departure from the gravity suitable to the occasion, is to be punished by the infliction of a forfeit; and the game has seldom been known to fail in producing a rich harvest of those little pledges. Of course, a good deal depends on the serio-comic gravity of the fugleman.

MAGIC MUSIC.

One of the players is sent out of the room, and a handkerchief, a pair of gloves, a brooch, or other small article, is hidden in some cunning nook. The signal is then given for the banished one to return; and a lady or gentleman acquainted with music takes up a position at the piano. It is for the musician to indicate, by the strains of the piano, when the seeker is approaching the object hidden. As he recedes from it, the music falls to a low tone, and a mournful cadence; as he approaches it, the notes swell out loud and clear, and bursts into a triumphal strain as he lays his hand on the prize. If properly managed, the magic music may be made to have almost magnetic power in drawing the seeker toward it.

Another way of playing the game, and an improved one, is to set the seeker some task to perform, instead of finding the handkerchief. Say, for instance, he is to take a book from a bookcase, and present it to a lady. As he walks round the room, the music increases in sound as he approaches the bookcase, but falls as he passes it. This tells him in what locality his task is. He takes a book, and the music sounds loudly and joyously. He begins to read—no! the music falls at once; he is faltering in his task. He carries the book round the room. As he approaches the lady, the notes burst forth loudly again, concluding with a triumphant flourish as he presents the volume to her with a gallant bow. In case of failure, a forfeit is exacted, and each player must have a task set him, or her, in turn.

TWIRLING THE PLATE.

The players sit or stand around a table covered with cloth, and one of them takes up a wooden or metal plate, which sits on its edge, and gives it a spin. As he does this he names some one of the players, who is obliged to catch it before it has done spinning, or pay a forfeit. The player so called on sets the plate spinning in turn, calling upon some other player to stop it, and so on around.

HOW DO YOU LIKE IT? WHEN DO YOU LIKE IT? AND WHERE DO YOU LIKE IT?

This is a guessing game. One of the company retires, while the rest fix on some article or object—for instance, light, an apple, money, &c. The person who has gone out is then recalled, and proceeds round the circle, asking each player in succession, "How do you like it?" Supposing the thing thought of to be *money*, the first may answer, "In abundance," the second, "Ready," and so on. The questioner tries to gain from the answers thus given some clue to the nature of the thing thought of. The second question, "When do you like it?" will probably help him. One of the players may reply, "When I have to pay my bills;" another, "When I want a new coat," and so on. The third question is almost certain to help a judicious questioner out of his puzzlement. "Where?" "In my pocket," one of the players will reply; another, "At my banker's," and so on. Some one is almost sure to drop a hint which will set the guesser upon the right track. Three guesses are allowed him. If he succeeds, he must point out the player whose answer gave him the clue, and the latter pays a forfeit and goes out to be puzzled in his turn. Failing to guess in three trials, the first player must try another question. The art of the game consists in choosing words with more meanings than one, such as cord (chord); for then the answers may be varied in a very puzzling manner. One will like a *cord* round his box; another a c(h)ord in a piece of music; another on the piano, &c.; thus key (*quay*), bark, vessel, are good words to choose.

WHAT IS MY THOUGHT LIKE?

The party sitting round as usual, one of them thinks of some person, place, or thing: the Emperor Napoleon (the first or third will do), New York, a coal-scuttle, the Island of Tahiti—any thing, in fact, that first occurs to him; and then he asks each of the company in turn, "What is my thought like?" They, in complete ignorance as to the nature of the said thought, reply at random. One says, for instance, "like a steam-engine;" another, "like a cavern;" a third, "like a tea-kettle." When an opinion has thus been collected from each one, the questioner tells what his thought was, and each player, under penalty of a forfeit, has to give a reason for the answer made to the first question. We will suppose, continuing the instance just begun, that the questioner says to the first in the company, "My thought was Napoleon III. Now, why is Napoleon III. like a steam-

engine?" The answer is ready enough: "Because he goes at an uncommonly fast pace." "Why is he like a cavern?" "Because his depth is one of his distinguishing qualities," replies the second. "Why is he like a tea-kettle?" "Of course, because he boils over occasionally," says the third player, triumphantly; and so the game goes merrily on through the circle. There is an anecdote told of the poet Moore, which is worth repeating. Moore was once at Lord Holland's house, among a distinguished circle of guests, and "What is my thought like?" was the game of the evening. When the question came to him, the poet replied, "a pump." The thought happened to be, "Lord Castlereagh," a statesman famous for the absurd speeches he made in Parliament. Among other strange assertions, he had said of an opposition member, "The honorable gentleman came down to the house *like a crocodile, with his hands in his pockets.*" Well, every one thought Tom Moore was posed; but the poet, with a merry smile, gave not only an answer, but a poetical answer to the query; he replied:—

"Because it is an empty thing of wood,
Which up and down its awkward arm doth sway,
And coolly spout, and spout, and spout away,
In one weak, washy, everlasting flood!"

CUPID'S COMING.

A letter must be taken, and the termination "ing." Say, for instance, that P is chosen. The first player says to the second, "Cupid's coming." "How is he coming?" says the second. "Playing," rejoins the first. The second then says to the third, "Cupid's coming." "How?" "Prancing" and so the question and reply go round, through all the words beginning with P and ending with ing—piping, pulling, pining, praising, preaching, &c. Those who cannot answer the question on the spur of the moment pay a forfeit.

CROSS QUESTIONS AND CROOKED ANSWERS.

The company sit round, and each one whispers a question to his neighbor on the right, and then each one whispers an answer; so that each answers the question propounded by some other player, and of the purport of which he is, of course, ignorant. Then every player has to recite the question he received from one player and the answer he got from the other, and the ridiculous incongruity of these random cross questions and crooked answers will frequently excite a good deal of sport. One, for instance, may say, "I was asked 'If I considered dancing agreeable?' and the answer was, 'Yesterday fortnight.'" Another may declare, "I was asked 'If I had seen the comet?' and the answer was, 'He was married last year!'" A third, "I was asked 'What I liked best for dinner?' and the answer was, 'The Emperor of China!'"

CONSEQUENCES.

This is a round game, to play at which the company must be seated at a table. Each player has before him, or her, a long, narrow piece of writing-

paper and a pencil. At the top of the paper each writes a quality of a gentleman. "The fickle," for instance, or "the insinuating," or "the handsome," "the ugly," or any epithet, in fact, that may occur to the mind at the moment. But nobody may see what the neighbors to the right and left have written. The top of each paper is then folded down, so as to hide what has been written, and each one passes his paper to his neighbor on the right, so that every player has now a new paper before him. On this he writes a gentleman's name; if that of one of the gentlemen in the company, so much the better. Again the papers are passed to the right after being folded over; the beauty of the game being that no one may write two consecutive sentences on the same paper. *The quality of a lady* is now written. Fold, and pass the paper—*The lady's name*—then where *they met—what he said to her—what she said to him—the consequence*—and *what the world said.* The papers are now unfolded in succession, and the contents read, and the queerest cross questions and crooked answers are almost sure to result. For instance, the following will be a specimen:—"The conceited Mr. Jones (one of the company) and the accomplished Miss Smith met on the top of an omnibus. He said to her, 'Will you love me then as now?' She said to him, 'How very kind you are;' the consequence was, 'they separated forever,' and the world said 'Serve them right.'" Another strip, on being unfolded, may produce some such legend as this: —"The amiable Artemus Ward and the objectionable Mrs. Grundy met on the mall at the Central Park. He said to her, 'How do I look?' She said to him, 'Do it;' the consequence was 'a secret marriage,' and the world said, 'We knew how it would be.'"

I LOVE MY LOVE WITH AN A

Is a well-known game, but it must be kept up briskly; for if too much time be allowed the players for deliberation, the interest flags at once, and the sport becomes dull. "The very *defect* of the matter," as Launcelot Gobbo would say, lies in quickly finding epithets beginning with any given letter of the alphabet, such as A, B, or C, and the penalty for failure is a forfeit. The company sit round, and each has to love his or her love with a different letter. The first (we will say a lady) begins—"I love my love with an A, because he's amiable. I hate him with an A, because he's arrogant; he took me to the sign of the 'Artichoke,' and treated me with apples and ale." "I love my love with a B," continues the second, "because she's beautiful. I hate her with a B, because she's bounceable. I took her to the sign of the 'Brown Bear,' and treated her with bread and butter, and beer." "I love my love with a C," says a third, "because he's candid. I hate him with a C, because he's captious. He took me to the sign of the 'Cart-horse,' and treated me to curds and cream." And so the game goes on through all the letters of the alphabet, with the exception of poor X, for the very good reason that no English word begins with that unfortunate letter. Instead of going regularly round the circle, it is better that each player should have the power, after "loving his love," to call upon any one of the rest to continue the game.

This gives an additional interest to the proceedings, from the unexpectedness of the summons.

PROVERBS.

One of the company who is to guess the proverb leaves the room; the remaining players fix upon some proverb, such as "All is not gold that glitters"—"A bird in the hand is worth two in the bush"—"Birds of a feather flock together"—"Train up a child in the way he should go"—"A miss is as good as a mile." A proverb being chosen, the words are distributed in rotation through the company, each player receiving a word which he must bring in in the answer he gives to any question asked by the guesser. We will suppose the proverb, "Train up a child in the way he should go," to have been chosen. The first person will receive the word "train," the second "up," the third "a," the fourth "child," the fifth "in," the sixth "the," and the seventh "way," and so on. The person who has gone out is now called in, and begins his questions with the first player, something in the following manner: *Q.* "Have you been out to day?" *A.* "No, I must *train* myself to like walking better than I do." He turns to the second player. *Q.* "Are you a member of the National Guard?" *A.* "No, I gave it *up* some time ago." The third player has an easy task to bring in the word *a*, but the fourth, with the word *child*, finds his work more difficult. *Q.* "Are you fond of reading?" *A.* "Any *child* might answer that question." Now, the guesser, if he be a sharp reasoner, will see that this answer is evasive, and only given to bring in the word *child;* he will, perhaps, guess the proverb at once; but if he is a cautious personage he will go on, and finish the round of questions before committing himself by a guess, for he is only allowed three. If he succeeds in guessing the proverb, he has to point out the person whose answer first set him on the right track, who must then pay a forfeit, and go out in his turn to have his powers tested.

THE EMPEROR OF MOROCCO.

This is one of those games in which the art consists in preserving an immutable gravity, under every provocation to laugh. In "the Emperor of Morocco," two of the players, generally one of each sex, advance with measured steps into the middle of the room, and ceremoniously salute each other, and the following dialogue takes place, the speakers being compelled to look one another full in the face:—

FIRST PLAYER: The Emperor of Morocco is dead. SECOND PLAYER: I'm very sorry for it. FIRST PLAYER: He died of the gout in his left great toe. SECOND PLAYER: I'm *very* sorry for it. FIRST PLAYER: And all the court are to go into mourning, and wear black rings through their noses. SECOND PLAYER: I'm VERY sorry for it. They then bow again and retire to their places, while another pair comes forward to go through the same impressive dialogue; and so on, till the game has gone all round the circle, a forfeit being the penalty for the slightest approach to a giggle.

BUFF

Is a similar game to the last. One of the players comes forward armed with a poker, which he taps on the floor—knock, knock, knock. "Whence come you?" asks one of the company. "I come from poor Buff, full of sorrow and care." "And what said Buff to you?" is the next question. The intruder replies—

"Buff said, 'Baff!'
And he gave me this staff,
And he bade me not laugh
Till I came to Buff's house again."

And with this he delivers the poker to his questioner, and marches out. But in the mean time the spectators have been trying their best, by grimaces and droll remarks, to overset the gravity of the emissary of the respectable Buff. One says, "Just look at him; he is going to laugh!" Another, "He hasn't a staff at all—it's a poker!" "Don't he look as if he wanted his dinner!" and any other facetious remarks that may suggest themselves on the spur of the moment.

Sometimes the formula is changed, and Mr. Buff's allocution is as follows:

"Buff says Buff to all his men,
And I say Buff to you again;
Buff he neither laughs nor smiles,
In spite of all your cunning wiles,
But keeps his face with a very good grace,
And carries his staff to the very next place."

THE FAMILY COACH.

Each person in company represents something connected with a family coach; one is the harness, another the horses, a third the coachman, a fourth the footman, a fifth, sixth, and seventh, the pole, whip, and drag, and so on, till each player has a representative office. One of the company begins to relate an anecdote, and each time he mentions the "family coach," all the players must rise from their seats and turn round. When he mentions harness, or wheels, or pole, or any other part of the equipage, the persons representing those parts must rise, each at the mention of his name, and turn round. Failing to do this, they pay a forfeit. The story itself will be something in the following way:—

"You must all have heard, at some time or other, of my friend, Mr. Timothy Tapertit. He lived in a capital house at Hackensack, with Mrs. Tapertit, and all the little Tapertits, who all had snub noses and crooked legs, and were considered very like their father. He was a very comfortable sort of man, Mr. Tapertit, and liked to have a good establishment about him, a steady *coachman* (coachman rises and turns round), a tall *footman* (footman does likewise), and every thing comfortable and handsome; but the thing he prided himself on most of all, was his *family coach* (all the players rise and turn round). This *family coach* (all turn round again) was a very complete machine in its way. It had real *wheels* (wheels turn round), and a *pole* (pole

turns), and there was a good set of *harness*, and a pair of *horses*, and a *drag*, and every thing complete; in fact, it was a famous *family coach*." Then he proceeds to describe Timothy Tapertit ordering out this famous vehicle for a drive; and an accident that takes place, involving endless difficulties with the coachman, footman, harness, horses, and every part of the turn-out, ending with the expression of a fixed determination on the part of Mr. Tapertit to get rid of his equipage as soon as possible, and to be bothered no more with the *family coach*. If well managed, this game cannot fail to produce plenty of fun and forfeits.

EARTH, AIR, AND WATER.

One of the players is furnished with a handkerchief, which he throws suddenly and unexpectedly at another, crying out the name of "earth," "air," or "water," whichever he likes, and then counting ten as rapidly as he can. Before he has come to ten, the person at whom the handkerchief is thrown must name a creature that inhabits the element thus mentioned, or, failing to do this, pays a forfeit. Thus, suppose the thrower of the handkerchief says WATER—one, two, three, four, five, six, seven, eight, nine, TEN, the person challenged must call the name of some fish; if air, the name of a bird; or, if earth, that of a quadruped. If the question is put very abruptly, and the number quickly counted, the players will often be unable to get out their reply quickly enough, and the forfeits come in merrily. The best way is, to look at one person, and then unexpectedly throw the handkerchief at another.

ORANGES AND LEMONS.

A good children's game. Two of the players take each other's hands and hold them up in the form of an arch (as in the "Sir Roger de Coverley" dance), and the others, taking hold of each other's coats and dresses, pass under the arch one after the other, while the archway players chant the following ditty:

"Oranges and Lemons, say the bells of St. Clements.
You owe me five farthings, say the bells of St. Martin's.
When will you pay me? say the bells at the Old Bailey.
When I grow rich, say the bells at Shoreditch.
When will that be? say the bells at Stepney.
I do not know, says the great bell at Bow.
Here comes a candle to light you to bed,
And here comes a chopper to chop off the last, last, last man's head."

And as the last man comes to the arch, it descends like a portcullis, and cuts him off from his companions. His captors then ask him if he prefers oranges or lemons, and according to his reply he is sent into the right or the left corner of the room; the chant then recommences, and continues till all the last men's heads have been duly cut off, and the players are divided into two parties on opposite sides. They then take hold of each other round the waist, and the foremost players grasp each other by the hands. The party that can drag the other across the room wins.

PIGEONS FLY.

The players are seated at a table, and each puts his two forefingers on the board before him. The leader cries out, "Pigeons fly!" and suddenly lifts his hands in the air to imitate the action of flying; all the players have to do likewise. The leader raises his hands each time he calls out a name; but the others must only remove their hands from the table at the names of such creatures as really fly. The leader's object is to entrap them into incurring forfeits by lifting their hands at the wrong time, which, under judicious management, some of them are sure to do. Thus, the leader cries in rapid succession: "Crows fly!—Eagles fly!—Gnats fly!—Sparrows fly—*Horses* fly!" In the excitement of the game, some are sure to lift their hands from the table, oblivious of the fact that horses do *not* fly, and they pay forfeits accordingly.

RED-CAP AND BLUE-CAP

Is a good game, and used to be very popular at sea, in the olden times, among the little middies. The penalty of a mistake was cobbing with knotted handkerchiefs; but, of course, in polite society, this part of the ceremony is dispensed with—a forfeit, or something similar, being substituted. The players sit round in a circle, and represent tailors. Each has a name, and one is the master. One man takes the name Blue-cap, another is Red-cap, a third Yellow-cap, a fourth Black-cap, and so on, through as many colors as there are players. The leader then pretends to examine the work, and says: "Here's a false stitch; who made it, Blue-cap?" Blue-cap immediately answers: "Who, sir?—I, sir?" "Yes, you, sir!" "Not I, sir." "Who then, sir?" "Yellow-cap, sir." Yellow-cap must at once take up the word, and the same dialogue is repeated. "Who, sir?—I sir?" &c., another workman being named as the delinquent. Any one who fails to answer to his name pays a forfeit. If briskly kept up, the game is a thoroughly good one.

CONCERT.

The players represent an orchestra, each one taking charge of an imaginary instrument, and going through the motions of playing upon it. Thus, "Fife" too-toos on an imaginary instrument about nine inches long; "Drum" bangs away at an invisible parchment; "Trombone" puts one hand to his mouth, and shifts the other to and fro as he grumbles out an accompaniment; "Cymbals" clashes his two hands together, and each and all are kept in order by a conductor, who stands in the midst, beating time energetically. At a signal from the leader, they all go off simultaneously; but when he holds up his hand, they must stop instantaneously. He then pretends to find fault with one or more of the players, who must instantly answer with some excuse adapted to their instruments; violin pleading that he has no rosin; harp, that a string is broken; and so on. Any hesitation

at once entails a forfeit, as does, also, an answer not immediately connected with the instrument of the person challenged.

PRUSSIAN EXERCISE.

This game furnishes a good joke, but must be played circumspectly, that no offence may be given, and no unpleasant consequences arise. The company are drawn up in line, with a sergeant and captain—the former standing at the head of the line, the latter in front of the regiment, to give the word of command. The two officers must be in the secret, and act in concert. The captain gives the order, and puts his men through their drill, they taking the time from the sergeant. After a few ordinary commands, such as "Heads up," "Eyes right," etc., the word is given to "Ground right knees," whereupon all the men kneel down on the right knee. Then comes, "Right hands forward," whereupon the sergeant stretches out his right arm and hand horizontally in front of him, at full length. "Left hands backward," and the left arms are thrust back as nearly horizontal as possible with the shoulders. Now comes the word "Fire!" at which the sergeant gives his neighbor a push; he, taken unawares, tumbles against the next man, and down goes the whole row like a house of cards.

"MY LADY'S TOILET"

Is very like the "family coach." Each person represents some necessary of the toilet—brush, comb, soap, scent, brooch, jewel-case, &c., and the lady's maid stands in the middle of the circle, and calls for any article her lady's is supposed to want. The personator of that article must then jump up, or be fined a forfeit for negligence. Every now and then the abigail announces that her lady wants her whole toilet, when the whole circle of players must rise and change places. The lady's maid herself makes a bolt for a chair, and the player who is left chairless in the scuffle becomes lady's maid.

YES AND NO.

One of the players thinks of any person or thing, and the rest sit round and ask him questions about it, which he answers with "yes" or "no," taking care to give no other explanations. From the information thus gained, each gives a guess as to what the thought was. If the questions are ingeniously framed, the solution is generally discovered, unless the "thought" be peculiarly abstruse. The game is a very good one, and we herewith emphatically recommend it, particularly as affording an opportunity of "cooling down" after a romp.

COPENHAGEN.

First procure a long piece of tape or twine, sufficient to go round the whole company, who must stand in a circle, holding in each of their hands a part of the string; the last takes hold of the two ends of the tape. One remains standing in the centre of the circle, who is called "the Dane," and

who must endeavor to slap the hands of one of those who are holding the string, before they can be withdrawn. Whoever is not sufficiently alert, and allows the hands to be slapped, must take the place of the Dane, and, in his turn, try to slap the hands of some one else.

THE FAGOTS.

This game consists in forming a double circle, the players placing themselves two by two, so that each boy, by holding a girl in front of him, makes what is called a fagot. It is necessary that the players should be of an even number. The circles being formed, two persons are chosen, one to catch the other. When the person who is pursued does not wish to be overtaken (which would oblige him to take the place of the pursuer), and at the same time desires to rest, he places himself in front of any one of the fagots he chooses, but within the circle, so that this fagot is then composed of three persons, which is contrary to rule. Then the third one, who is on the outside of the circle, must at once run, to avoid being caught. If he *is caught*, he takes the place of the pursuer, who, in his turn, starts off, or, if he prefers it, enters into the circle, and places himself before one of the fagots, thus obliging a new player to run like the former one; this one himself can at once oblige another player to run, by placing himself, in his turn, before a fagot, and it is this which gives life to the game, provided the players have a fair share of spirit and agility.

HUNT THE HARE.

The company all form a circle, holding each other's hands. One, called the hare, is left out, who runs several times round the ring, and at last stops, tapping one of the players on the shoulder. The one tapped quits the ring and runs after the hare, the circle again joining hands. The hare runs in and out in every direction, passing under the arms of those in the circle, until caught by the pursuer, when he becomes hare himself. Those in the circle must always be friends to the hare, and assist its escape in every way possible.

THUS SAYS THE GRAND MUFTI.

In this game one of the company sits in a chair, and is called the Mufti, or the Grand Mufti. He makes whatever grimace or motion he pleases, such as putting his hand on his heart, winking, sneezing, coughing, stretching out his arm, smiting his forehead, etc. At each movement he says, "Thus says the Grand Mufti," or "So says the Grand Mufti." When he says, "Thus says the Grand Mufti," every one must make just such a motion as he does; but when he says, "So says the Grand Mufti," every one must keep still. A forfeit for a mistake is exacted.

HUNT THE RING

Is a good substitute for the old game of "hunt the slipper," which has become almost impracticable in these days of crinoline. A long tape, with

a ring strung on it, is held by all the players, as they stand in a circle, with one in the middle. They pass the ring rapidly from hand to hand, and it is the business of the player in the midst to hunt the ring, and try to seize the hands that hold it; while the other players, on their part, make his task more difficult by pretending to pass the ring to each other, when it may really be in quite another part of the circle. The person in whose hands the ring is found has to take his turn in the middle.

TRANSPOSITIONS.

A capital game to sharpen the wits, and one from which amusement for many hours may be extracted. The company sit round a table, and each person is provided with a pencil and a scrap of paper. Each one writes on his or her scrap a name of a city, country, river, mountain, or, if preferred, of some historical personage, transposing the letters so as to make the recognition of the word as difficult as possible, and accompanying it with a few written words of explanation; for instance, if a town is selected, the explanation must give some particulars of situation or circumstance, to set the guesser upon the right track; if a personage, the date at which he flourished and the country which gave him birth ought to be given. Then the papers are folded together and deposited in the middle of the table; and when they have been well mixed, a folded paper is drawn by each player, and those who cannot decipher the transposition which has fallen to their share are condemned to pay a forfeit. When all have been read, the game begins anew. The following transpositions of words may serve as hints to those who wish to introduce this very amusing pastime among their friends:

Ann Filkr.—The name shared by two great discoverers, one of whom visited an unexplored region, and the other explored a region he had never visited.

Simon Ficar ran.—A celebrated general of the Revolution, who rarely commanded over fifty men, and yet was more dreaded than those whose followers numbered thousands.

Voosarinlimb.—A soldier who gave his country a government, and died while in arms against the government he created.

Jack Wanders? No.—A man who rose from obscurity to the highest position in the country; who became a soldier, without a military education; and received the highest degree a university could confer, without learning.

Lollcomew River.—A potent sovereign, who ruled a nation with despotic sway and profound wisdom, advancing her glory and consolidating her power, but whose name is not recorded among her kings.

TASKS FOR REDEEMING FORFEITS.

Now that we have shown our friends so many ways of getting rid of their property, under the guise of forfeits, it is but fair that we should give them a few directions concerning the methods by which they may win them back,

and therefore we give, for the benefit of all players of games of forfeits, the following selections, from a large variety of tasks to be executed by those players whose gloves, handkerchiefs, and other properties have been laid under embargo for their owners' shortcomings during the game. The usual method of proceeding in redeeming forfeits is this: A lady, who undertakes to cry the forfeits, sits on a chair or sofa, and another player, who is to pronounce the various sentences, sits or kneels on a low stool before her. One of the forfeited articles is held up by the lady on the sofa, over the head of the doomster, who must not see what it is. The following formula is then gone through:

> "Here's a pretty thing, and a very pretty thing;
> What shall the owner do, now, of this very pretty thing?"

"Is it fine (belonging to a gentleman), or superfine (belonging to a lady)?" asks the pronouncer of sentences, and, according to the reply, he selects a task appropriate for a boy or a girl. The task having been selected, the article is held up to be owned.

Among the penalties most frequently inflicted are the following:

To Perform a Grecian Statue.—This is a boy's forfeit, and he achieves his task by mounting on a chair or table, when each one of the company advances, in turn, and puts him in a different attitude, in which he must remain until it is altered by the next person. The fun consists in the ridiculous postures the unfortunate victim is compelled to assume by his tormentors.

To Pay each Person in Company a Compliment, and then Spoil it.—This will exercise the quickness and wit of the performer, and enable him, besides, to take a little harmless revenge on those of his friends who have been harassing him during the evening. To one, for instance, he says, "You have a finer voice than any one in this present company; but," he adds, as the person addressed bows to the compliment, "it's a pity that you never give it any rest." To another, "You have certainly a great amount of wit, *only* you always exercise it at the expense of your friends;" and to a third, "Your eyes are certainly very bright, and is that the reason why they're always searching for their own reflection in the looking-glass?" and so on, until you have finished your round.

To Brush off the Dime.—This is a trick which may be played off on a novice, and will excite much merriment if well managed. The owner of the forfeit is told that he will have to shake off a dime from his forehead, and a coin is shown him. The dime is then enclosed in a damp handkerchief, and pressed hard against the forehead of the victim, who is not allowed to put his hands up to his head. Feeling the impression of the dime on his brow, he will have no doubt that it has been really fastened on, and not suspecting its removal in the handkerchief, he will begin shaking his head from side to side, and even rubbing it against projecting pieces of furniture, to the delight of the spectators, in persevering efforts to get rid of what is not there.

Bow to the Wittiest in the room, kneel to the prettiest, and kiss the one whom you love best.

To Play the Judge.—This consists in sitting on a chair in a conspicuous part of the room, and listening with the most perfect gravity to the complaints brought by the rest of the company, who try, by all kinds of ridiculous reports and artifices, to upset the stolidity of the learned gentleman on the bench.

Compliments under Difficulties.—Pay six compliments to six different persons, avoiding the use of the letter *l* in every one.

Prison Diet.—A glass of water and a teaspoon are brought into the room, and the person who has to undergo "prison diet" is blindfolded, and a teaspoonful of cold water administered to him by any of the others, until he guesses who is feeding him, which seldom happens, unless he be born under a fortunate star, till the glass of water is half empty.

Repeating a Piece of Poetry, or telling an anecdote, is a very favorite way of redeeming a forfeit. Singing a song, either humorous or sentimental, is also admissible.

The Knight of the Rueful Countenance.—The knight whose forfeit is to be redeemed is marched slowly round the circle of company by his squire, who kisses the hand of every young lady (and the cheeks of all under a certain age), wiping the mouth of the knight after each salute. If the knight's countenance relaxes from a rueful expression into a smile, his forfeit is not returned until he has gone through some other task.

Other penalties for forfeits there are in abundance, such as to laugh, cry, cough, and sneeze in the four different corners of the room; to count forty backwards; to kiss your own shadow, without laughing, four separate times; to compose a rhymed verse; to hop on one foot three times round the room; to ask a riddle of each person in company; to repeat, without hesitation or mistake, some such brain-puzzle as the following:—

"Robert Rowley rolled a round roll round;
A round roll Robert Rowley rolled round;
Where rolled the round roll Robert Rowley rolled round?"

Or the still more heart-breaking epic:—

"There was a man and his name was Cob;
He had a wife, and her name was Mob;
He had a dog, and his name was Bob;
She had a cat, and her name was Chittrybob.
'Bob!' says Cob.
'Chittrybob!' says Mob.
Bob was Cob's dog;
Mob's cat was Chittrybob;
Cob, Mob, Bob, and Chittrybob!"

And when all these pains and penalties have been gone through, if there should still be some pledges remaining, we recommend that a general amnesty be published, and such pledges returned to their respective owners, the

penalties being remitted. Above all things, let these round games, like all others, be pursued in a hearty and generous spirit; and let us, in concluding this chapter, remind our young readers that the real way to enjoy them is to preserve a hearty good-humor in the heat of playing.

THE INTERRUPTED REPLY.

The company place themselves in a circle. The one who commences says in a whisper to his right-hand neighbor, "Of what use is a book?" (or any other article he may select.)

His neighbor must answer, correctly, "It is of use to read," and then ask another question of *his* right-hand neighbor—for instance, "Of what use is a goblet?"

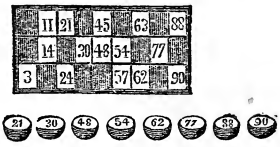
The art in this game consists in so framing one's questions, that they will produce answers altogether unsuited to the preceding question. If the answer is, "It is of use to drink from," a laughable consequence ensues; for, when the round is finished, or, in other words, when the person who has commenced the game has been questioned in his turn, the questions and answers are repeated aloud, by taking the answer of the person on the player's right as a reply to the question of the person on his left; it follows, that to the question, "Of what use is a book?" one of the company has answered, "It is of use to drink from;" and so on with the rest of the questions and answers.

SEEING'S BELIEVING.

BOARD AND SLATE GAMES.

LOTO.

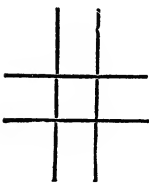
THIS is a good quiet game, and one that will keep the attention alive, and quicken the eyes of the players, if properly conducted. The cards and numbers used in playing loto may be procured at any toy-shop. There are twenty-four of these cards in the game. Each card is divided into three rows, and each row contains nine squares, five numbered, and four blank. These numbers are arranged in columns down the card, the first column containing the units, the second the tens, the third the twenties, and so on up to ninety, which is the highest number in the game. Thus, each card contains fifteen numbers, and each number is contained four times in the set of cards. Besides these cards, there are two bags; one containing a series of numbers, from one to ninety, on little wooden disks; the other about a couple of hundred round counters of horn, or, better still, of glass; for these counters are used for covering the numbered squares, and the numbers can be read through the circular glasses without uncovering the squares. One of the players shuffles the loto cards, mixing them well together, and then distributes them in turn to the rest, reserving a share for himself. If there are twelve people to join in the game, each will receive two cards; if only eight, each may have three, which must be placed one under the other, so that the player can glance his eye rapidly down the series of units, tens, &c. Sometimes, however, it is agreed that each person shall receive only one card, which proceeding is said to increase the interest of the game by protracting it. The dealer then puts his hand into the bag of wooden numbers, and draws them out as they



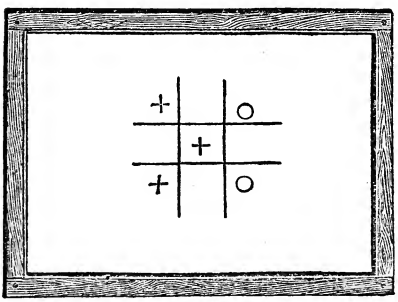
LOTO CARDS AND NUMBERS.

come, calling them aloud, and the players cover the numbers on their cards as the names are cried. A pool must previously be made, of nuts, cherries, sweetmeats, ratafia cakes, or any similar agreeable offerings the liberality of the host or hostess has provided; sometimes a collection of marbles, contributed by the players, is made to answer the purpose. The player who first covers five numbers in a row on the same card, takes one-quarter of the pool; he who covers two rows entirely in the same way has the second quarter, and the fortunate wight who has first crowned the whole series of numbered squares on his card or cards with the little disks of glass obtains the remaining half. As each portion of the pool is cleared, the player who claims it has to read out his numbers, which are verified by the wooden marks drawn from the bag, to make sure that there are no mistakes. When the pool is small, it is sometimes better to make no payment for the first row, or even for the first two rows; the whole being adjudged in undivided splendor to the fortunate player who covers his whole card. On the other hand, where the pool consists of a number of small objects, such as nuts, the number of prizes may be increased, a small fee being paid for the first two *consecutive* numbers covered, a larger for the first three, another for the first four and five, and still larger premiums for one, two, and three rows. All this is to be agreed upon before the game is commenced.

TIT-TAT-TO.



This is a game that small boys enjoy, and some big ones who won't own it. A figure is drawn on the slate, as in the cut, and the object of the game is that one shall draw three crosses in a row before the other can draw three naughts in that way; each to mark but one at a time, somewhere between the bars, and the two to mark in turns. Thus A makes a mark + in the centre; B begins with his O on the upper right-hand corner. Then A puts another + on the upper left-hand corner. B discovers his aim, and puts an O in the lower right-hand corner which stops A from getting his three crosses in a row diagonally. Now if A, looking to get his three crosses, makes his mark down at the lower left-hand corner, as the cut shows, B will make a naught between his other two, and so get "tit-tat-to, three in a row." If A is smart, he will put his cross between those two naughts, though it end in a draw game, for B will put his naught on the opposite side, and then no one can make it.

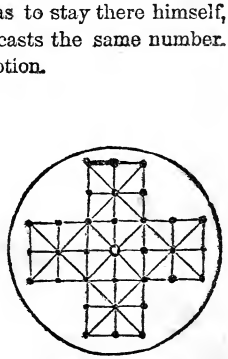


THE GAME OF GOOSE.

This is an old-fashioned game, originally brought from Germany, where it is still known under the name of "*Post und Reise-spiel*" (Post and Journey game). To play at "Goose," a large square sheet of paper is used, marked with sixty-two squares, arranged in a spiral line, and numbered successively; the goal of the journey, number 63, being in the centre of the paper. Two dice and a box are provided, and each player has some mark, generally a little figure shaped like a chess-pawn, and painted in some distinguishing color. One after the other, the players throw with the dice, and move their tokens according to the numbers they throw. Thus, he who throws six and four, advances ten squares; while the next player, who may, perhaps, only throw one and two, can only get three stages on his journey. The traveller who arrives first at the goal, 63, wins the pool. But the number, 63, must be thrown *exactly*, neither more nor less; if more are thrown, the player has to count the excess number backwards, which considerably increases the fatigues of the journey. For instance, he may be at 59, and only want four to land him safely in 63. If at this conjuncture he should throw 10, he must count *four forward* to 63, and the remainder backward, which will land his token in square 57, two squares farther from the goal than he was before. The name "game of goose" was given to this pastime, because, in the old-fashioned cards for playing it, every fourth and fifth compartment bore the figure of a goose; and the player whose throw brought him into one of these goose compartments might count his throw double. In the journey game, several obstacles are introduced to test the patience of the adventurous traveller. On one square he finds a bridge, to pass which he must pay a toll of one counter, or one nut to the pool; again, there is an inn, where he must rest two throws, and pay two counters by way of reckoning; further on he meets with a pond, and if the dice cause him to tumble in, he must remain till another player casts the same throw, and thus helps him out. A prison is also introduced, in which the same thing takes place, except that the relieving player has to stay there himself, until he in turn is released by some one else who casts the same number. Other obstacles may be introduced at the player's option.

FOX AND GEESE.

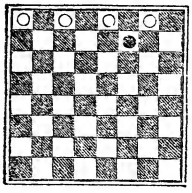
This is another quiet game of skill; and a capital preparation for those who wish to become good draught-players, or even chess-players, some day, is to render themselves thorough masters of the mysteries of "Fox and Geese." The form of the board is shown in the accompanying cut. The geese are represented by white pegs (or by pins, if the players draw their own board on a card), and the fox by a red or black one.



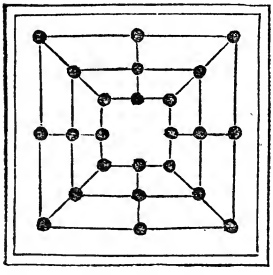
FOX AND GEESE.

The geese are seventeen in number, and are ranged as shown in the diagram; while the fox stands in the centre of the board. The geese may be moved along in the direction of the lines, but only one hole at a time. Their object is to block up the fox in a corner, or to surround him so that he cannot move; while he, on his side, can take any goose which has not another in the hole behind it for protection. If the fox can clear so many geese off the board that not enough are left to block him up, he wins; but if the geese are skilfully worked, they have a decided advantage over Reynard, and must win, by penning him into a corner, from whence he cannot extricate himself—and serve him right too.

There is another method of playing Fox and Geese on a chessboard, namely, with four white men, representing the Geese, and one black one, representing the Fox. The Geese are ranged on the four white squares nearest one player, and the Fox may be placed where his owner pleases. The best place for him is that marked in the diagram, as he can manœuvre in a very puzzling way. The Geese can only move forward, and the Fox moves either way. The object of the Geese is to pen up the Fox so that he cannot move, and the Fox has to break through. If the game is properly played, the Geese must win, the secret being to keep them all in a line as much as possible. The Fox tries to prevent this plan from being followed up; and if he can succeed in doubling the Geese, or getting one to stand before another, he is nearly sure to pass through them.



NINE MEN'S MORRIS.

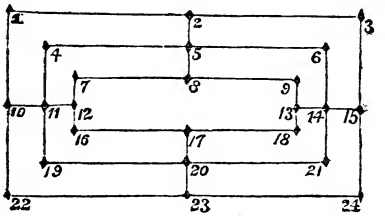


This game, sometimes called Merelles, is a very old one, and is interesting, though little known in this country. It is played upon a morris-board, or table, which is made as follows: Take a piece of wood or cardboard of any shape, and then paint or rule the central part in the manner shown; the black spots at every angle and intersection of the lines being the places for the men to be laid upon.

The men are 18 in number, nine white, and nine black or colored.

The manner of playing is briefly thus: There are two players; each has nine men (either draughts or counters), one set black and the other white. The pieces are to be laid down by the players alternately, the first object of each being to place his pieces, so that there may be three in one line (as on 6, 14, 21—4, 5, 6—10, 11, 12, etc.), and also to prevent his adversary doing so. (The angles, as 18, 21, 24, are not counted as one line.) When one player succeeds in this, he takes that one of his adversary's pieces from the board, which he considers most advantageous to himself. All the

pieces being laid down, the game proceeds by moving the pieces along the lines to other spots, each player's object still being to place his men, and to take the forfeit as before described; he must not, however, take either of his adversary's which are already in their desired position, unless the line become broken. The game is decided by the men becoming blockaded, or being removed from the board, as in draughts.



The following game will elucidate the above rules. The figures are placed on the diagram only for convenience of notation.

PLACING THE PIECES.

White.	*Black.*
7	16
18	9
11	10
4	19
5	6
2	8
14	23
20	22
1	24×1

THE MOVES.

White.			*Black.*		
1.	14 to 15		1.	10 to	1
2.	11	10	2.	19	11
3.	2	3	3.	9	3
4.	3	2	4.	13	9
5.	18	13	5.	16	17
6.	7	12	6.	6	14
7.	5	6	7.	8	5
8.	12	7	8.	9	8
9.	7 to 12		9.	8 to	7
10.	12	16	10.	11	12
11.	10	11	11.	7	8
12.	20	19×14	12.	8	9
13.	19	20	13.	12	7
14.	6	14×5	14.	1	10
15.	2	5	15.	7	8
16.	14	6×9	*Black resigns.*		

The diagram or the game may be drawn upon a slate, or upon a piece of stiff paper; and wafers or colored papers may be used where no better materials can be found.

SOLITAIRE.

This game has for the last few years become very fashionable. It is said that it was first invented by a Frenchman, to beguile the wearisome hours attendant on forest life, and for the amusement of the Indians, who pass much of their time alone at the chase, waiting in ambush for their prey for hours together. Be this as it may, the present attractive form and materials that are used to represent the game, *i. e.*, glass balls, of various brilliant colors, was the invention of an English clergyman, who had several made in this form, and, adding a profit to the expense of the materials, had the game sold for the benefit of a charity.

The game is played by a board with a number of holes, into which pegs are placed and removed during the progress of the game. But the balls of pretty colored glass are so universal, we will describe the game here as

played with the latter. The board is round, with either thirty three holes, as seen in Diagram No. 1, or thirty-seven holes, as seen in No. 2. A groove runs all round the board, for the convenience of laying the balls in as they are taken off the holes. In commencing the game, although the board is generally set out with thirty-seven or thirty-three balls, one must be removed at one of the corners, or in the middle. One ball takes another when it can leap over it into a vacant hole, in the same way that men are taken at draughts. The player must so calculate his progress that at the end of the game but *one* ball remains on the board; and the crowning point of success is to make this solitary ball occupy the *centre* hole. Two players may play at this game, though originally intended only for one—alternate moves being made. The player who has fewest balls left when neither are in a position to take any more, is declared the winner. We have numbered the diagram (No. 3,) for the convenience of players who follow our method of winning the game, by leaving only one in the centre hole, which is called the "GENERAL."

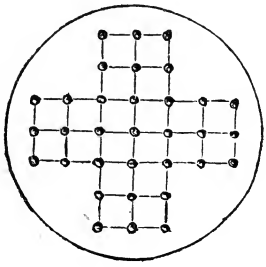


Fig. 1.

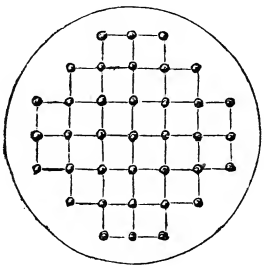


Fig. 2.

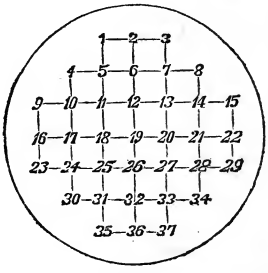
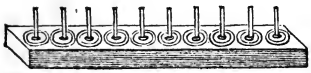


Fig. 3.

Remove Ball No. 19	From 11 to 9	From 29 to 27
From 6 to 19	26 " 24	14 " 28
4 " 6	35 " 25	27 " 29
18 " 5	24 " 26	19 " 21
6 " 4	27 " 25	7 " 20
9 " 11	33 " 31	21 " 19
24 " 10	25 " 35	leaving the General alone in his glory.

THE DECIMAL GAME.



Ten pins are fixed in a mahogany board, with ten rings lying on the pins. The game is to make these ten rings into five pairs, the player passing over two pins every move, and the five pairs being accomplished in five moves only.

AGON, OR THE QUEEN'S GUARDS.

Each player has seven pieces, viz., one queen and six guards. To commence the game, the pieces are to be arranged as follows:

Put the two queens on two opposite corners, and the guards on each side of the queens, each color alternate, with one hexagon left vacant between each piece (two hexagons will be vacant on each side farthest from the queens.) (See Fig. 1.)

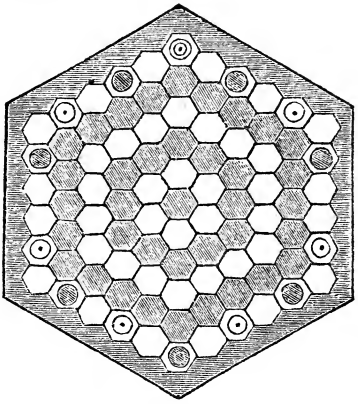


Fig. 1.

READY TO COMMENCE THE GAME.

If the players so agree, the game may be commenced by each alternately placing a piece anywhere on the board, and then, when all the pieces are laid down, each alternately moving forward to obtain the middle. Having decided which shall move first, the players alternately move a piece towards the centre, one hexagon at a time, or to the next hexagon of the same color, so that the piece shall remain at the same distance from the centre, it not being allowed to move a piece backward.

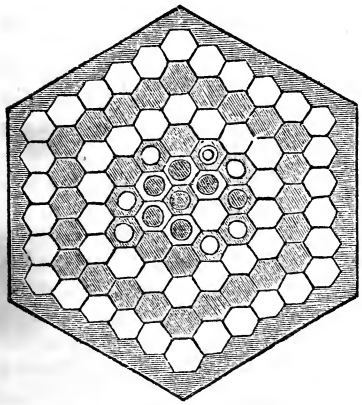


Fig. 2.

THE DARK PIECE BETWEEN THE TWO LIGHT ONES STANDING IN A RIGHT LINE MUST BE PUT BACK.

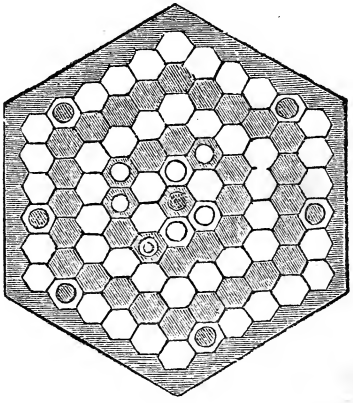


Fig. 3.

THE DARK QUEEN, BEING IN A RIGHT LINE BETWEEN TWO LIGHT PIECES, MUST RETIRE.

Any piece, except the queen, being in a position between two of the adversary's, so that the three pieces form a straight line, must be taken off the board for the next move, and put down anywhere in the outer row. (See Fig. 2.)

If the queen should be placed in the position between the adversary's, so that the three pieces form a straight line, the queen must be removed for the next move, but may be put in *any place*, being vacant, the player pleases. (See Fig. 3.)

That player who can first put all the pieces in the middle, that is, the queen in the centre, and the six guards around her, wins the game. (See Fig. 4.)

The players, being supposed to be sitting opposite each other, have the board placed with two corners right and left of each, and if the pieces have been placed as in Fig. 1, the color of those pieces the queen of which is on the right hand, is to be taken by each player.

Two experienced players may put the pieces in a particular position, symmetrically or otherwise, and, each taking the colors alternately, endeavor to win the game. The following are the laws of the game.

I. None but the queens are to occupy the centre.

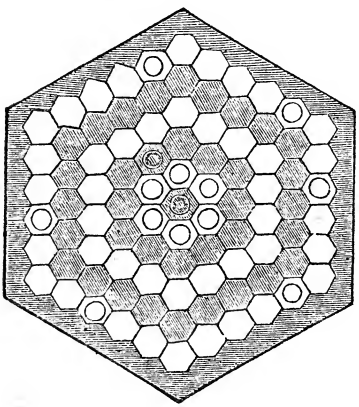


Fig. 4.

II. No piece must be put between two of the adversary's, standing in a right line.

III. No piece must be moved backward.

IV. Of two or more pieces liable to be put back at one time, the queen must be first moved off; any others at the player's option.

V. Any piece touched must be moved, or the move lost.

VI. Should the player put the six guards in the middle, leaving out the queen, such player loses the game by forfeit, as both are prevented from accomplishing the ultimatum of the game.

HINTS TO PLAYERS.—No advantage will be gained, but, on the contrary, frequently a loss, by throwing back one only of the adversary's pieces, as the piece thrown back may be placed so as more readily to obtain a much better position than that thrown back from.

As no piece is allowed to move backward, the queens must not be moved into the centre too hastily, as when there (having no move unless thrown out) their usefulness is impaired.

The player should endeavor to obtain such a position as to be able to throw back several pieces by following moves, and then move on to the middle, before the adversary can overtake or get between the pieces.

The surest mode to win the game, is to crowd the adversary's pieces as quickly as possible toward the middle, at the same time taking up a position to be able to throw back all his pieces in succession, as soon as an opportunity offers.

When a player has the queen in the middle, if not able to win the game, he may often reopen it by bringing a piece against the adversary's, so that, if his queen should be thrown back, he may throw back another piece in return; hence, in throwing back the queens, the greatest caution is always necessary.

The player will generally find it advantageous to have one piece at a greater distance from the centre than any of the adversary's; it must, however, be in a position to get to the middle when the game is drawing to a conclusion.

The position shown in Fig. 2 is certain loss of the game to the dark pieces; the light pieces, having forced the dark queen to move into the centre, will be able to throw back a dark piece every move, and thus win the game; but should the light pieces be moved too early into the middle, it will be impossible to throw back the dark queen without hazarding the reopening of the game.

In this game no advantage will be obtained or lost by having the first move, and it will be impossible for any player to determine which has the advantage until the game may be fairly considered to be won.

In variety of situations, the game will be found almost equal to Chess, and from the mathematical figure of the board (being a combination of hexagons), many symmetrical figures and situations may be devised, and the game played from these particular positions, thus affording an endless variety of amusement.

TABLE AND TOY GAMES.

DOMINOES.

THE authors who have "wasted the midnight oil" in investigating the origin of this popular game, have not yet come to a definite conclusion.

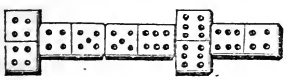
"Grammatici certant, et ad hue sub judice lis est;"

but, by the time the controversy shall have continued for some trifling time longer, say a couple of hundred years or so, there is every reason to suppose the question will be definitely set at rest—a reflection which cannot fail to inspire our young readers with a lively satisfaction. Certain it is, however, that the introduction of dominoes into America is of comparatively recent date, and that the game has enjoyed a large and steadily increasing popularity, being played not only by youngsters, but affording agreeable amusement to many "children of the larger growth."

Every one is familiar with the appearance of the little rectangular objects called dominoes, and made out of bone, ivory, or wood. A game usually consists of twenty-eight dominoes. Each of these is divided into two compartments, and the number of points on each domino varies, from the double-six downward, through six-five, six-four, &c., to double blank.

There are several ways of playing at dominoes. The following method, for two players, is at once the most simple and the one generally pursued. The dominoes are placed on the table, with their faces downward, and each player takes up one at hazard, to settle which of them is to have the *pose*, or right of playing first. The highest number of points decides this. The two dominoes used in the trial are then put back among the rest; the dominoes are well shuffled together, and the two players choose seven dominoes apiece, ranging them upright in a line on the table, with the faces toward them, so that each may see his own hand, but not his adversary's. Thus the players will have taken up fourteen out of the twenty-eight dominoes, of which an ordinary game consists. The other fourteen remain on the table,

faces downward, to form a reserve. The winner of the *pose* now puts down on the table, face upward, the domino that it suits him best to play (we shall give some advice on this subject presently). The adversary, in his turn, places a domino of his own, corresponding in one of its numbers with that placed by his adversary. Thus, suppose the first player to have played double-six;



the second may play six-four; the first then puts six-five; the second follows it up with five-four; and the first plays the double-four—the single numbers being placed lengthways, the doubles transversely; and so the game proceeds, till the player who has won the *pose* has expended all his dominoes, his adversary having one domino left—say six-three. In this case, the first player will count nine toward the game, that being the number of points remaining in his adversary's hand. The game itself is won by the player who first scores a hundred. The dominoes are then shuffled again, the second player having the *pose* this time, and the game continues with a fresh deal.

Generally, however, things don't go so smoothly. After two or three dominoes have been placed by the two players, one of them is unable to match any of those in his hand with the numbers at each end of the row on the table. In that case he passes, and his adversary plays instead of him, and continues to do so until the first player can again make use of one of his dominoes. If both players are compelled to pass, neither of them having a domino that will suit, they turn their hands face upward on the table, and the one who has the smallest number of points counts all his adversary's points toward his own game. This is called the *block game.*

The general rule for the player who has the *pose* is to play out the number which occurs the most frequently in your game. For instance, if the number four occurs four times in your hand, the chances are that your adversary will have only one, or, perhaps, none at all of the same number, and he will thus be compelled to *pass*, and you will gain a turn. It is good policy, too, to get rid of the higher numbers in your hand as soon as possible, for in case of a block, he who has the lowest number of points wins. Get rid of the *doubles* also; for they are the hardest to place.

It will thus be seen that the game of dominoes is one of mingled skill and chance. Of course, nothing can avail against a lucky hand; but the combinations of the game are various enough to give scope for a good deal of ingenuity. Sometimes, with two players, the system of "drawing" is resorted to; that is to say, when one of the players cannot follow suit, he takes a domino at hazard, from the reserve; and if this will not do, a second, and so on, till his purpose is answered. This is called the *draw game.*

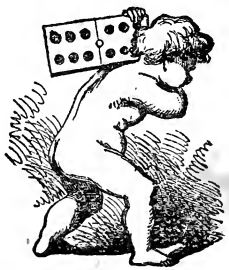
Generally the game is confined to two players; but four, five, or even six, may join in it, each playing on his own account, or divided into sides. In the latter case, the partners sit opposite to each other, the players having first drawn for partners, in the same way that they would for the *pose*, and

the two highest playing against the two lowest. He who has drawn the highest domino has the pose. The play is from left to right, and the side of the first player who is out wins, counting to its score the number of points still held by the opposite party. In this game there may be drawing or not, according to agreement. If the players don't draw, and, on a block occurring, and the dominoes being turned up, both sides are found to have the same number, the deal counts for nothing.

Another method of playing dominoes is called *Muggins*. Each player in the game draws five pieces. The highest double leads; after that they lead alternately. The count is made by fives. If the one who leads can put down any domino containing spots that amount to five or ten, as the double-five, six-four, five-blank, trey-deuce, &c., he counts that number to his score in the game. In matching, if a piece can be put down so as to make five, ten, fifteen, or twenty, by adding the spots contained on both ends of the row, it counts to the score of the one setting it. Thus a trey being at one end, and a five at the other, the next player in order, putting down a deuce-five, would score five; or if double trey was at one end, and a player was so successful as to get double deuce at the other, it would score ten for him.

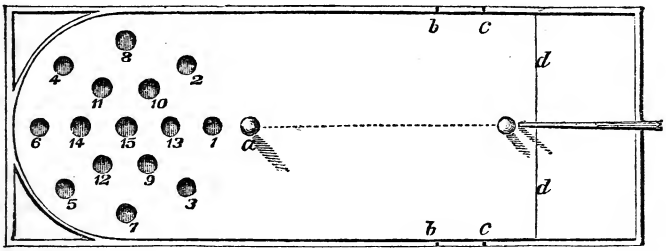
A double-six being at one end, and a four at the other, if the next player set down a double-four, he counts twenty — double-six=12+double-four=8=20.

If a player cannot match he draws from the pool, the same as in the draw game, until he gets the piece required to match either end or exhausts the pool. As in the draw or block game, the one who plays his last piece first, adds to his count the spots his opponents have; and the same if he gains them when the game is blocked, by having the lowest count. But the sum thus added to the score is some multiple of five, nearest the actual amount. Thus, if his opponents have twenty spots, and he has nineteen, he adds twenty to his score. If they have twenty-two he adds twenty, because that is the nearest multiple of five; but if they have twenty-three he would add twenty-five—twenty-three being nearer that than to twenty. The number of the game is two hundred if two play, but one hundred and fifty if there be three or more players.



BAGATELLE.

BAGATELLE is played on a table, smaller than that for billiards, cushioned circular at one end, and, instead of pockets at the sides and corners, it has cups, set flush with the table, into which the ivory balls are driven with the cue. These pockets are nine in number in the small table, which is about ten feet long, and are set equidistant from each other—one in the centre, and the others arranged around it, at one end of the table. The playing is done from the other end. In the larger table, which is from twelve to fourteen feet long, the cups are fifteen in number. Each of these is numbered—the centre being the highest; and the number of the cup counts for the player who puts a ball in it. The balls are nine in number—one red, and eight white. The red counts double when put into a hole.



In playing, there are two games generally used, and known as the English and French.

The English game is played thus: The red ball is placed on the spot *a*. A white ball is driven by the cue, from a spot anywhere between the base-line, *dd*, and an imaginary line drawn from the plates at *cc*, so as to hit the red ball. If the red ball is driven into any hole, it counts double the number set down to that hole. If the white ball, it counts the number it gets. If the red ball is missed at the first go, it counts one to the opposing party. After the first go, it is not necessary to hit the red. All the balls are now driven up. This is repeated, and the sum of the cups made in the two "rolls" is scored to the player. The next player follows, and the one scoring the most wins the game.

The French game is different. The score is one hundred. Each player, unless they are divided into sides, and then only one of a side, rolls up for the "break." The red ball is set on the spot, and the player, grasping the eight white balls in his hand, rolls them up. The sum of the cups into which the balls enter is ascertained; and the one who has the most in this way, plays first. The red ball is set on the spot, as in the English game; but to miss it scores five to the opposite party. Whenever it is not in a cup, the red ball must continue to be hit by the player, under a like penalty in

case of failure. If it be pocketed, he must aim at and hit any white ball out of cup; and, if he fail in that, the opposite party scores one. Should both his balls go in, and there is no white ball out of the cups, one is taken from those not played, and placed on the spot for him to aim at. So long as the player puts a ball in a cup, he plays on; and what he makes is counted to his score. When his stroke cups no ball, he gives way to the next, and so on, in succession. When all the white balls are played up, and the last one played makes a cup for itself or another ball, provided it hits a white ball in doing it, the white balls are returned, the red ball replaced on the spot, and the same player takes the break and plays on. If the last ball effects nothing, the next player in order takes the break. Whoever first scores one hundred is out. The highest number to be made by any one player, by cupping all the balls, would be one hundred and fourteen, the red ball being in the centre, and counting thirty, and the others in the next largest numbers, from 14 to 7, inclusive. This is rarely, if ever, done.

If any ball is driven with such force as to return beyond an imaginary line, drawn from and between the plates *b b*, it is dead, and put on one side until the next break.

As you may often best succeed by cushioning and carroming, the study of angles is necessary in this game, as in billiards.

RUSSIAN BAGATELLE.

Description of the Board.

A cavity for the red ball to be placed in, at the commencement of the game, *only*. It counts double, *i. e.*, 20, as marked inside.

An arch, with a bell suspended within it, which, if rung by any ball in passing through, counts double for whatever that ball may score by the stroke. If it does not pass through, but merely falls into the cup underneath, it counts only as marked, *i. e.*, 50.

The remaining arches with cups beneath them, count respectively as marked, viz.: 20 on the sides, and 25 in the centre.

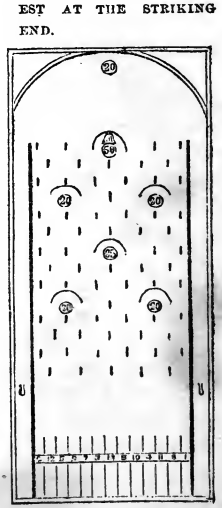
The pegs are brass pins standing up, about one and a half inches in height.

There are slightly indented spots (one on each side of the board), from which the balls are projected.

Cavities into which the balls run; they count according to the numbers placed above.

The board, which is generally four feet six inches in length, and two feet four inches in width, is lined with superfine green cloth.

ELEVATED END OF THE BOARD, WHICH IS AN INCLINED PLANE, LOWEST AT THE STRIKING END.



The game is played as follows:

1. Commence the game by stringing for the lead, as well as for choice of balls and side of board; the player who gets the highest number takes the lead.

2. The leader must place his ball in the cavity, on the side of the board he selects, and play it up, counting the points he may make by the stroke; after which, his opponent plays from the opposite side of the board; and so on alternately.

3. When a ball lodges on the board without going into a hole, or running down to the bottom, the game must be continued with the other ball, each player using it alternately—whoever removes the ball so lodged, scores the number of points made by both the balls, and the game proceeds as at first. Should both the balls be lodged on the board, that ball which was last stopped must be taken up and used to continue the game.

4. The player continues to lead, as long as he can hole his ball in any of the *cups*.

5. The game to consist of one hundred or more, as may be agreed upon at the commencement.

6. If the player's ball ring the *bell*, that is, passes through the bell-arch, he scores double the number he would otherwise gain by the stroke.

7. Playing into the top hole (marked 20), is the game at once.

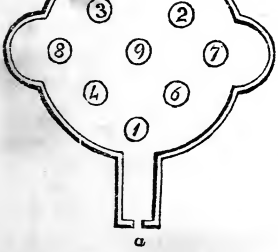
8. Should the ball go round to the opponent's side, the striker loses five points and the lead; or, should he play his ball up, and it returns without going on the board, he loses one point and the lead.

9. The winner of the game takes the lead in the next.

AMERICAN BAGATELLE.

Although this game bears the name of Bagatelle, it has scarcely any resemblance to that game, either in the form of the board, or the skill requisite for playing. A strong and quick hand are the most necessary qualifications of the player. The board, which is of the following form, has raised sides like the bagatelle-board, and contains within its circumference nine flat pieces of ivory let into the wood, on which the numbers one to nine are marked, in the same order as in the holes of the bagatelle-board; on each of these spots a small wooden pin, resembling a skittle-pin, is placed, that on the central spot being white. The object of the player is to knock down as many of these pins as possible, that he may count the numbers on which they stood: this he effects by means of the spinner, *a*, Fig. 2, which consists of a piece of wood with a round flat top, from which a peg or foot

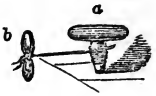
Fig. 1



a

projects: a piece of string is wound tightly round this peg, and passed through the slit in the raised side at one end of the board, *a*, Fig. 1. The spinner is then pressed closely against the side with the left hand, while the player, grasping the handle, *b*, attached to the string in his right, pulls the string forcibly, and with a sudden jerk; the consequence is, the string is unwound from the spinner, and the latter, falling on the board, has acquired the spinning motion a humming-top would have acquired under nearly similar circumstances.

Fig. 2.



Away goes the spinner into the midst of the pins, knocking down some and passing safely between others: in the course of its evolutions it soon reaches the side of the board, and, if it is spinning with tolerable force, the instant it touches the wood it flies off suddenly at a tangent, and again dashes among the pins. The principal amusement consists in watching the progress of the spinner, as it bounces from one side of the board to the other, and when it appears about to expire, it suddenly perhaps starts forward and wins the player the game. The game, as in bagatelle, is counted by adding together the numbers marked on the spots on which the fallen pins stood, and may be decided by one, two, or three spins from each player, to be previously agreed upon.

BROTHER JONATHAN.

This is the name of a modern game which may be played out or in doors; a square board being laid upon the ground, if out of doors, or if in a room, a square being chalked upon the floor. It is divided into sixteen compartments, in each of which a number is marked from one to five hundred. These numbers are not placed regularly, but are contrasted, so that those of the smallest value are nearest to those of the highest, and in some instances the squares for the higher numbers are made much smaller than those for the lower numbers. (See Diagram.) A mark is made, at an optional distance from the square, for the players to stand, who in succession throw up one cent or more, and make their score according to the number assigned to the compartment in which the cent rests, provided it be within the square; for if it lies upon one of the lines that divide it from the others, the cast is forfeited and nothing gained. Two thousand is usually the game, but this depends upon the pleasure of the players.

40	200	10	400
90	5	300	50
1	500	20	80
70	30	100	60

Brother Jonathan is similar to a simple game known as *crack loo*, which consists in throwing up a copper to see who can come nearest the cracks in the floor.

SHOVEL-BOARD.

The method of playing this game is as follows:—A shovel-board is chalked out on the boarded floor. About nine or ten yards in length will be quite enough, and three feet in breadth. At one end of the shovel-board a line is

drawn across, about four inches from the end, and parallel with it. At four feet distance from this line another is drawn across the board. The players stand at the opposite end of the board, with heavy pieces of wood in their hands. Each man has four of these, and each set has a distinguishing number or mark. Then, in rotation, the players each shove one of their pieces of wood along the board. Those that glance off at the side, or go beyond the end of the board, or fall short of the first line, are not counted. Those that lodge between the first, or four-foot line, and the second, count one; those that cross the second line, or lie upon it, without overhanging the extreme edge of the board, count two; and those that overhang the edge, without clearing it, three; this being the most difficult feat to achieve. When two players only are engaged, twelve is generally the game; but when there are more, the number must be increased in proportion, and averages between fifteen and twenty. The board is usually sanded, and sometimes iron weights of about one or two pounds weight are used instead of the wood, as they slide somewhat easier.

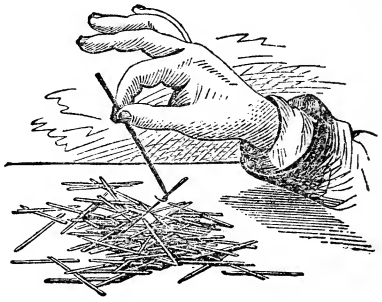
DIBS, OR KNUCKLEBONES.

This game is played with five little joint bones from a sheep's leg; hence its name, "knucklebones." It is generally played by two persons. There may be four, two on each side; but the game should be limited to this number, as only one player is occupied at a time, and the others would find the long interval of looking on till their turn came somewhat tedious. Artificial dibs may be obtained at the ivory-turners, and at many toy-shops. The first player takes the five knucklebones in his hand, and throws them upon the table. Then he has to go through the first figure, or "ones." He takes up one dib from the table, and tosses it into the air; while it is still rising, he takes up one other dib from the table, and then catches the first as it descends. This he repeats until all the four dibs have been picked up, one by one. The next figure, "twos," consists in taking up the knucklebones, two at a time; "threes," in taking up the first three, and then the remaining one; and "fours," in taking them all up in a bunch together. Then come "picka-backs," one, two, three, and four. In these figures the dib is first tossed up, and caught on the back of the hand; and then, it being tossed up again, the four other dibs are taken up successively, as in "ones." Hand-sweeps, elbow-sweeps, and arm-sweeps, consist in putting two dibs at the hand's

length, an elbow and wrist length, and the length of an entire arm apart; then another dib is thrown up, and the dibs on the table must be taken up by a sweep of the hand in the interval, before the dib thus thrown up descends and is caught. When the first player misses any of the feats, lets a dib drop, or fails to pick the others up as required, he loses his innings, and the second begins; the first having to recommence, when his turn comes again, at the point at which he left off. There are many other figures, but it would take more space than we can spare to describe them. The player who gets through all the figures first, of course, wins the game.

JACK-STRAWS.

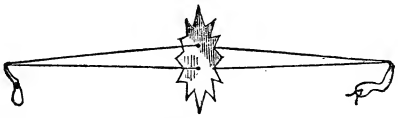
Some people call this game *Spelicens:* it may be played by two, three, or four players separately, or by taking sides. The straws, which are little pieces of wood, bone, or ivory, mostly shaped like lucifer matches, with some made into little battle-axes, halberds, spears, shovels, &c., are thrown in a heap together, either out of the hand, or a very large dice-box. The player, then, with a little stick, having a crooked pin at the end, endeavors to remove each straw, without stirring the heap. If he should stir it, he stops and the next player goes on. When the straws are all picked up, the players count their gains, and whoever has the most wins the game. The plain straws count one each, the spears five, the hatchets ten, the halberds fifteen, the shovels twenty, and so on—though this is at the pleasure of the players. Some boys may think this poor fun, but it is more exciting than is supposed. A good story is told of a young man, who had a great passion for that terrible and degrading vice, gambling. He had played away his whole estate, and was reduced to want. His wealthy relatives agreed to give him a new fortune, if he would solemnly promise never to play again at the games they enumerated. He agreed, and they wrote out a list of every thing like chance or skill they could think of, down to marbles and dibs. But one game they missed. A fortnight after they had given him his new fortune, one of them dropped in to see him, and found him playing jack-straws with one of his old cronies, at ten pounds (the affair happened in England) for a plain straw, and a hundred pounds each for hatchets and shovels.



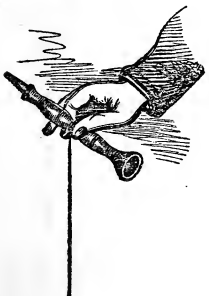
THE WATER-CUTTER.

The water-cutter is a toy whose action depends on the same mechanical law as the bandilor. It is formed of a piece of lead, or other metal; the

edges, if you prefer it, notched like the teeth of a saw. In this metal disk two holes are pierced, at some distance from each other, and through these a piece of string is passed, the two ends being afterwards tied together. If the two extremities of the doubled string are pulled sharply, and the string instantly slightly relaxed, the "cutter" will make several revolutions, on account of the impetus it has received when the string was pulled: in per-



forming these revolutions it will twist the string, which being again pulled with a jerk will be unwound, and necessarily carry round with it the metal disk; the string is again loosened, and the greater impetus the cutter has now acquired will twist the string to a greater extent than in the first instance; by continuing to pull and relax the string adroitly, the cutter may be made to revolve with great rapidity. The name water-cutter has been applied to this toy, because one mode of playing the game is to make it revolve with one of its edges dipped in water, so that it may sprinkle the bystanders and the player himself, to the amusement or annoyance of one or both, according to circumstances.



CUP AND BALL.

A ball of ivory or hard wood is attached to a stem of the same substance, having a shallow cup at one end, and a point at the other. The player holds the stem in his right hand, as shown in the figure, and, having caused the ball to revolve, by twirling it between the finger and thumb of his left hand, he jerks it up, and catches it either in the cup or upon the spike, to receive which a hole is made in the ball. We need scarcely say, that the latter feat can only be performed by a skilful player. Cup and ball was the favorite pastime at the Court of Henry III., of France.

THE BANDILOR.

The bandilor is a toy made of hard wood, resembling a pulley with a very deep groove; round this groove a piece of string is wound. To set the bandilor in action, the end of the string must be held between the finger and thumb, and the toy allowed to fall; by this means the string is necessarily unwound; but if its fall be suddenly checked by a sharp jerk, the motion is instantly changed, and instead of continuing to fall, it will rise towards the hand again, and the more rapidly it is falling, the more readily it can be made to change its course.

JACK-STONES.

This is the same game as "dibs," except that it is played with five smooth, flat, and circular pebbles, instead of the bones. Every boy knows the rhyming jingle attached to the Latin word "Finis," meaning "The End," which used to be placed at the close of every book:

"F, for figs, and I, for jigs,
And N, for knuckle-bones,
And I S, for jack-stones."

N is not a good initial letter for knuckle-bones, but the I, for jigs, and I S, for jack-stones, will do. In old times, and the jingle is very old, I was used for J.

BATTLEDOOR AND SHUTTLECOCK.

The best quality of this really capital old game is, that it can be played by quite young children of both sexes, and is equally adapted to "children of the larger growth." By increasing the size and weight of the shuttlecock, and substituting heavy wooden battledoors for the light, leather-covered frames, with their catgut network, used by the little players in our illustration, the game of shuttlecock may be made to yield considerable exercise, as well as amusement. The simplest form of pursuing it is where there are two players, who strike the shuttlecock alternately, the one who first suffers it to fall to the ground being the loser. But the game may be made more interesting, and at the same time amuse a greater number, when there are five or six players, who divide into sides, each having his number—one side, 1, 3, 5; the other, 2, 4, 6. The shuttlecock, first struck by 1, must then be hit by 2, and then, in turn, by 3, 4, 5, and 6. The player who lets it drop is out; and the side of which one or more men are still in, after all their opponents have lost their position, wins the game.

A good shuttlecock may be made, where there are no toy-shops to supply it, by cutting off the projecting ends of a common cotton-reel, trimming one end with a knife, and drilling holes in the flat surface left at the other, in which holes the feathers of quill pens are to be inserted. As for the battledoors, we should think very little of the boy who could not, on an emergency, cut out a set from a bit of thin board, or the flat lid of a box, with the help of the big blade of his pocket-knife.

The French are great adepts at this game, and light battledoors and shuttlecocks are wielded by them with great perseverance and considerable skill. There is one great advantage about this game, namely, that without requiring any great amount of strength, it thoroughly exercises every muscle of the player, and furnishes real exercise without producing exhaustion.

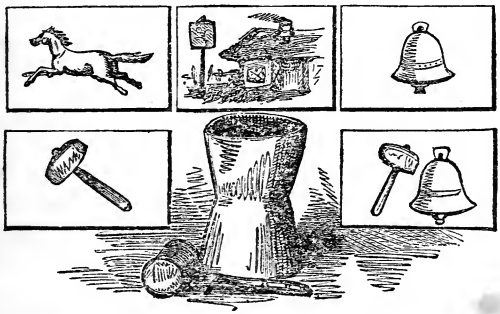
The Siamese play shuttlecock in a way that would astonish our readers; their battledoors being nothing more nor less than the soles of their exceedingly flat feet.

GRACES.

This is an in-door sport, which answers when a boy is kept in the house on a rainy day, but it is only an amusement to be indulged in when there are girls of the party. Boys never play it with each other, except for a "lark." It is a very graceful exercise, however, and a good training for catching a ball. Each party is armed with a hoop and two light sticks. The hoop is to be thrown by one party toward his opponents, from the crossed ends of his sticks. The young lady throws hers in the same way; and each catches the hoops thrown by the other party—the two hoops being kept going back and forth through the air. Or it may be played with one hoop, which is less difficult.

SCHIMMEL.

To play this amusing game, which is of German origin, it is necessary to be furnished with five cards on which are painted the figures of a white horse, an inn, a bell, a hammer, and a bell and hammer, with eight little ivory cubes marked on one side only; six numbered 1, 2, 3, 4, 5, 6, and the other two marked, one with a bell and the other with a hammer; with a box for throwing the dice, a hammer for disposing of the cards by auction, and a proportionate quantity of counters for the players. The cards, dice-box, and auctioneer's hammer, are shown in the annexed illustration. Any



youth who can draw may easily prepare the cards; the cubes may be procured from an ivory-worker's and may be marked with ink. The game can

be played by as many persons as are present. The counters are to be distributed by one of the players who holds the office of cashier, and their value having been previously determined upon by the players. This being done, twelve are to be deposited by each player in the pool. The cashier then disposes of the five cards separately to the highest bidders, the produce of which is also to be placed in the pool. The white horse is by far the most valuable card, and therefore fetches the highest price in counters. The inn ranks next, and is usually purchased by the most speculative player, as its value depends upon circumstances. The bell and the hammer generally fetch the same number of counters, these cards being equally valuable, and the card upon which both bell and hammer are painted fetches about half the number that is given for one of the single figures. The bidders are not bound to confine themselves to the number of counters dealt out to them at the beginning of the game; should they exceed it, they may pay the remainder of the debt by instalments out of their receipts in the course of the game.

Each person is at liberty to purchase as many cards as he may think proper.

The dice are then to be thrown by the players alternately, beginning with the holder of the white horse, any one being allowed to dispose of his throw to the highest bidder. When all blanks are thrown, each of the players pays one to the holder of the white horse, and he pays one to the inn. If with the blanks the bell, or hammer, or the bell and hammer together are thrown, the possessor of the card so thrown pays one to the white horse.

When numbers accompany the bell, hammer, or bell and hammer, the cashier is to pay counters, to the amount of numbers thrown, to the holder of such card, from the pool; but if numbers are thrown unaccompanied, the cashier then pays to the thrower.

When the pool is nearly empty there arises an advantage to the inn, for if a player throws a figure greater than the quantity contained in the pool he pays the overplus to the inn; thus: suppose 4 are in the pool, if the player throws 10, he is to pay 6 to the inn; and if 2 are thrown, those 2 are paid to him from the pool, and so on till a figure is thrown which clears the pool, and so concludes the game.

If all blanks are thrown after the inn begins to receive, the players pay nothing, but the owner of the white horse pays one to the inn; and should the bell, &c., be thrown with the blanks, the holder of that card pays one to the inn; and if numbers accompany the bell, &c., the holder of that card must pay to the inn the number thrown above those remaining in the pool.

LE DIABLE.

This is a French game, with a French name, which we do not care to translate into English. The toy-dealers, who include the plaything among their stock, get over the difficulty by calling it a *Les graces cone*, so we will

do the same. The pastime consists in balancing a double cone on a string attached to two sticks. The cone can only be prevented from falling by being kept continually in motion. After the player has learned to balance it on the string, he tosses it up and catches it again, and it may also be made to whirl round the string, and to dance upon it. Two players can also toss it from one to the other, like a *Les graces* hoop, and a good deal of exercise can be got out of this demoniac toy, which we recommend, as somewhat of a novelty, to our young friends.

And now, we hope that we have redeemed our pledge, by enumerating some ways in which even a rainy holiday may be made to pass off pleasantly. One observation we must, however, still make, and then, we hope, our young friends will be able to say as Cicero said to the tailor, in the senate-house, "*Rem acu teligisti*" (Thou hast touched the matter sharply), *i. e.*, WITH A NEEDLE. The secret of the whole matter of passing a dull day happily lies in the one word *good-humor*. Even wet weather may be made indirectly agreeable by becoming the occasion for the exercise of wit and invention in our amusements.

> "There is some touch of goodness in things evil,
> If men observingly distil it out,"

said Shakespeare; and the remark applies just as strongly to boys. But our tempers on a wet day ought not to be influenced by the weather, except, by way of contrast, they appear all the brighter. If a boy is testy and impracticable, let him be first reasoned with, then snubbed; and then, if refractory, banished by his companions in the play-room for a season, for, as one bad egg will spoil the pudding—as one little rift within the lute will spoil all the melody of music—as one falsehood will destroy confidence that has taken months, and perhaps years, to establish—as one wasted opportunity will sometimes destroy the prospects of a whole career, and prevent the success that would have crowned the efforts of a lifetime—so a whole merry party may have a disagreeable flavor imparted to it, merely by the presence of that very objectionable boy, young quarrelsome.

EVENING AMUSEMENTS.

THE GERMAN DWARF.

COMIC DIVERSIONS.

As, during the Christmas holidays—happy times, looked forward to with impatience, and ever remembered after they have passed—the long evenings of winter will demand a variety of amusements, we have here put together a few evening sports and recreations; some of them of very recent invention, and others of older date.

All, however, are provocative of mirth, and, whenever possible, they have been so framed that they take the form of competition, and place the unsuccessful in ludicrous positions. We have personally tested every amusement which is here mentioned, as is our usual custom when we make any recommendations, and we can declare, with perfect truth, that every game described will be universally successful, if played with proper spirit.

THE GERMAN DWARF.

This is a most comical entertainment, and one which, if well managed, will deceive the sharpest eyes. Two persons are required to enact the

character of dwarf, and they do so after the following manner: A good, deep window is chosen, where the curtains are full and voluminous, and where there is plenty of space for movement. A table is drawn to the window, and the curtains disposed so as to fall over the table, and to conceal the persons behind it. The speaking player, whom we will call, for shortness, the speaker, then proceeds to array himself in as gorgeous a manner as possible, taking care to put on a rather voluminous jacket, with large sleeves. The ladies are capital hands at improvising such costumes. The arms must be dressed to represent legs, and the hands thrust into shoes or boots, the latter being preferable. Of course, the real origin of the pretended legs is concealed by the jacket.

The second player, whom we will call the actor, takes his place behind the speaker, pushes his arms under the sham legs of the speaker, and fits them carefully into the sleeves of the jacket. The speaker puts his hands on the table, and the curtain is then carefully drawn and pinned up, so as to prevent any one from seeing the performers. This part of the business is performed by some one who has been let into the secret.

The doors of the room are then opened, and the spectators admitted.

The dwarf, who is not restricted to Germany, but may assume any other nationality at pleasure, then begins an harangue, interlarding it copiously with foreign words and expressions. While he speaks, the actor performs the gestures, and here lies the fun of the whole thing. (*See illustration.*) The actor always tries to make his gestures wholly inappropriate to the language of the speaker, and indulges in all kinds of practical jokes.

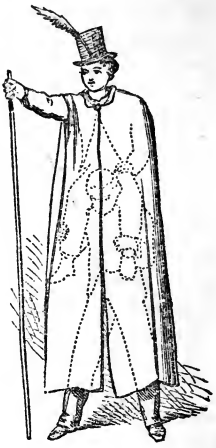
It is a good thing to introduce the national dance. Of course, any thing will do for a dance, and a lady can always be persuaded to play some brisk tune. If well arranged, this is very effective, for the legs have no weight to support, and can be as lively as you please. Here, also, the hands of the actor come in well, and the combined effect is inexpressibly ludicrous.

Once, when the writer was enacting the part of speaker, he made a most ridiculous mistake. Just as he was delivering an eloquent discourse, a fly settled on his nose, and, forgetting the rôle which his arms were then playing, he brushed it away with his right hand, which was at that moment dressed in a silk stocking and Turkish slipper. There was a general shout through the room, and he was told by one of the spectators, that no studied piece of acting could have been half so comical as that unexpected gesture into which he was surprised.

THE KENTUCKY GIANT.

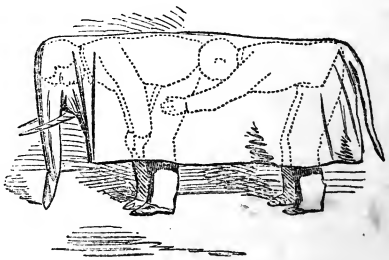
This is a jolly companion to the German Dwarf, and, like it, never fails to produce roars of laughter, when performed at an evening company. It is necessary to have two persons to represent the giant, and the method of enacting the part is best explained by the accompanying engraving. It will be seen that one boy puts on a *long* cloak, and perches himself upon the shoulders of his companion, who arranges the folds of the cloak so that the

parts shown by the *dotted* lines in the illustration, are entirely concealed from the eyes of the spectators. The boy who *does* the head and shoulders of the giant should carry a long staff, as a cane, and, if he wear a stove-pipe hat, with a feather in it, it will greatly *heighten* the effect. The giant's wife may also be represented by one person, with the assistance of a cane and piece of lath, the latter eighteen inches long, fastened about four inches from the top or end of the former, thus forming a cross. The person representing the giantess attires himself in an old dress. A long shawl is pinned over the lath, an old bonnet placed on the end of the cane, and the preparations are complete. The giantess usually walks into the room and pretends to look for a nail in the wall (this gives the performer an opportunity of concealing his face), and, after looking at the wall a minute or so, he stoops down as low as he can, at the same time being careful to lower the cane. He then *gradually* rises, until he stands upon the tips of his toes, and *as he does so*, he as *gradually* raises the cane, with the bonnet and shawl upon it, until he appears to touch the ceiling. The lath represents the shoulders of the giantess, the bonnet her head, and the cloak covers the whole deception. The giantess, if well done, is sure to be greeted with shouts of laughter.



THE ELEPHANT.

This is as comical a diversion as either of the foregoing, and never fails to elicit applause. Two boys are required to personate the elephant; one represents his fore, and the other his hind legs. The two boys place themselves as shown in the illustration; a quilt doubled over *three* or *four* times is now placed on the backs of the boys, which serves to form the back of the elephant; a large blanket or travelling shawl is then thrown over them, one end of which is twisted to represent the trunk of the animal, the other end serving in a similar manner to represent his tail. Two paper cones enact the tusks, and the elephant is complete. A bright and witty boy should be selected to perform the part of keeper, and he must lecture upon the prodigious strength, wonderful sagacity, and



extreme docility of the animal, proving the latter quality by lying down and permitting the elephant to walk over him. It always amuses a company to *show them the elephant*.

THE DECAPITATION.

This is a rather startling *ruse*, and though in the sequel it is very funny, it should not be practised upon those who have very weak nerves.

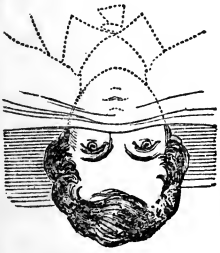


Fig. 1.

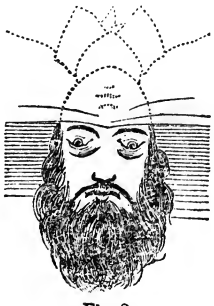


Fig. 2.

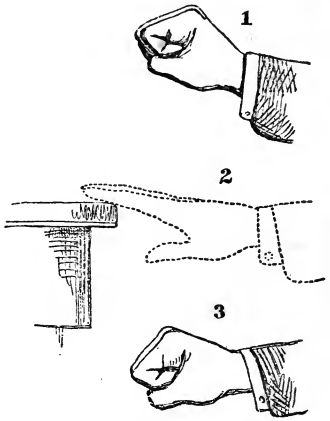
The object sought to be represented is a decapitated head, and is done in the following manner:—A large table covered with a cloth, reaching the floor all around, is placed in the centre of the room. A boy with soft silky hair should be selected to represent the *head*, and to do this he must lie on his back under the table, with all his person concealed except a portion of the head, which should be exposed to view from under the table-cloth, as shown in Fig. 1.

Next a companion, in collusion with him, must carefully comb the hair to imitate the whiskers of a man (see Fig. 2). He must also paint false eyebrows on the *under* part of the eyes, and false nose, mustache, and mouth upon the forehead (see Fig. 2). This is easily done with the assistance of a camel's-hair brush, and a little Indian-ink, and when well completed the head appears to be entirely disconnected from the body, and has a very startling effect. The effect may be intensified by powdering the face, to make it appear pale.

THE OLD MAN'S FACE

Is also a very comical amusement, and productive of much merriment. The only requisite for producing it is a person's hand, a handkerchief, and a little Indian-ink. The engraving will show the simplicity of the arrangement, and demonstrates how easy it is to form an old man's face.

HOW TO STRIKE THE KNUCKLES WITHOUT HURTING THEM.



Select a marble mantel or any other hard surface, then tell the spectators that by a certain preparation you use, you have made your knuckles so hard nothing can hurt them, in proof of which you offer to strike them on the marble slab of the mantel. To do this, you raise your fist firmly clinched above the mantel, and as you bring it rapidly down, open your fingers suddenly and strike the marble, then close them again as represented in the engraving, 1, 2, and 3. If this is quickly done, you will seem to have knocked your knuckles violently.

KNOCKING THE HEAD AGAINST A DOOR.

This ruse is very similar to the preceding one, and will surprise a company if well done. The performer should introduce the diversion as follows:—

"Do you desire me, ladies and gentlemen, to teach you my secret for making impromptu verses? It is to rub your forehead well, not with the hand, as Horace did of old, but by giving your head some good sound blows against a wall." Then proceed to knock your head three or four times against a door, and put your hand to your forehead, as if to deaden the pain produced by the violence of the blows. But you must do something more than merely touch the door with your head. At the same moment that you make the movements as if knocking yourself, you ward off the blow, by the aid of the left hand held to the door, about the spot which you appear to strike, while the closed right hand, concealed from the audience, strikes on the other side of the door.

The correspondence of the movements of the head with the noise of the blows given by the clinched fist, produces a perfect illusion on the minds of the spectators.

HAT MEASUREMENT.

Very few people are aware of the height of the crown of a stove-pipe hat. A good deal of fun may be created by testing it in this way: Ask a person to point out on a wall, about what he supposes to be the height of an ordinary hat, and he will place his finger usually at about a foot from the ground. You then place a hat under it, and to his surprise he finds that the space indicated is more than double the height of the hat. The height of a common flour-barrel is just the length of a horse's face, and much fun may be derived from getting a company to mark the supposed height of a flour-barrel. In nine cases out of ten they will mark many inches too high.

THE IMMOVABLE CARD.

Take an ordinary visiting-card, and bend down the ends as represented in the annexed figure; then ask any person to blow it over. This seems easy enough, but it may be tried for hours without succeeding. It is, however, to be done by blowing sharply on the table, at some distance from the card.

THE BOTTLE IMP.

This is a feat productive of much amusement, and can be played, or rather exhibited, by one person at a time, while the others are resting from some game that demands exertion, or after some lively dance.

Nothing is simpler than this feat. The player has to stand a wine-bottle on his head, stoop down, pick a dime from the ground with his lips, and raise himself again to his feet, without letting the bottle fall from his head or touching it with his hands.

To perform this feat correctly, it is necessary to bend the head forward until the chin rests on the breast, and then to lodge the bottle on the crown of the head. Unless this precaution be taken, the bottle is sure to fall off before the lips can be brought near the ground. The best plan is to bend the knees very gently, and come to the ground on one knee. Then lower the hands to the ground, and, thus sup-

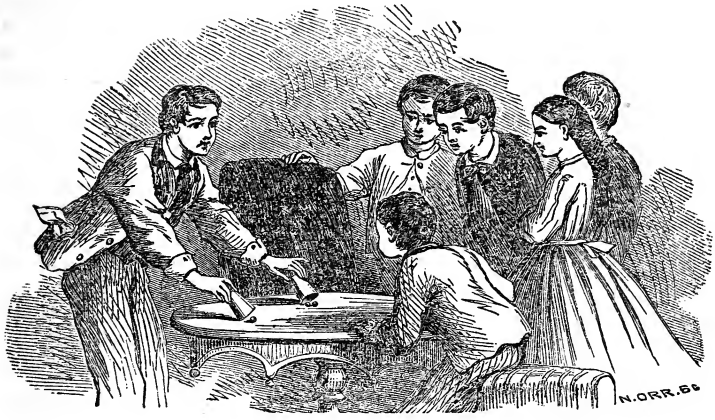
ported, push the feet gradually back until the face is able to reach the ground.

In order to make the feat more imposing, the following arrangement has a very fine effect. Get two corks, and push one firmly into the neck of the bottle. Into the upper part of the other stick the points of two equal-sized forks, and run a needle perpendicularly through its middle. Then push a tolerably stout pin at right angles with the cork in the bottle, and rest the needle point upon the pin's head. The balance will be found perfect, the forks will rotate easily when touched, and the needle will not slip off the pin unless it meets with a jerk.

This arrangement does not greatly add to the difficulty, though it appears to do so, the forks rocking and revolving in a most alarming manner with every movement of the player. Nor is there any danger of the upper fork falling off, and the point of the needle running into the head, although such a catastrophe seems to be extremely probable. If the experiment of knocking the needle from its hold be tried, it will at once be seen that one fork-handle will be the only object that can strike the head; and although it may give a sharp rap, it will do no further harm.

The principle of the balanced forks will be explained hereafter in "*Scientific Recreations.*"

PARLOR MAGIC.



SLEIGHT OF HAND.

It is our intention, in the following pages, to lay more stress upon those tricks which require no apparatus, than upon those for which special apparatus or the assistance of a confederate is required. No one is so well pleased by a trick whose essence evidently lies in the machinery, while every one feels pleasure at seeing a sleight of hand trick neatly executed. For our own part, we despise all the numerous boxes, bottles, variegated covers, and other gimcracks which are generally seen on a conjurer's table; and we have never been so pleased with any performer as with one who did not even require a table, but pressed into his service articles borrowed from his audience, as he stood before them or walked among them. The spectators should never be able to say, "Ah! the trick lies in the box; he dares not show it to us!"

The following tricks have almost all been successfully performed by the editor, and have caused him some reputation in the magic art. Some are his own invention

THE TRAVELLED BALLS.

This is always a favorite feat, because it needs no apparatus, and is remarkably effective. You take three or four cups, whether of metal or china is of no consequence, provided that they be opaque: breakfast cups answer very well, and silver goblets better. Professional conjurers always have three highly-ornamented conical vessels, but we prefer to use cups and tankards because they can be borrowed in the house and excite no suspicion.

You place three cups upon a table, and exhibit an equal number of balls. Walnuts, potatoes, plums, &c., &c., will answer very well, but the easiest balls for work are made from cork, in the following manner. Take some champagne corks and cut them into spherical form, rubbing them smooth with a file. Then hold them in front of a bright fire, and they will begin to swell rapidly. When they have swollen as much as possible, char the outsides by holding them in the flame of a candle, rub them smooth with a rag, and polish with a little oil upon leather.

You put a cup over each ball, and cover them from sight. You then take each ball separately and fling it in the air. After the third ball has been thus flung away, you take up the cups again, and, to the surprise of the spectators, the three balls have come back again, and each is found under its respective cup. Then you take a ball out of one cup, fling it in the air, and presently find it under another cup; and, lastly, you bring all the three under the same cup.

The secret of this capital trick lies chiefly in the *fourth* ball, the existence of which the audience do not know.

Before you begin, put a fourth ball in some place where you can easily get at it,—in your pocket, for example, or stuck on a little spike fastened to your own side of the table: a broken needle answers well for this purpose. Throw the three balls on the table, and while you are handling the cups with the left hand, and shifting the balls about in them, quietly get the fourth ball into the right hand, and hold it at the roots of the second and third fingers. You will now find that with the tips of those fingers you can pick the ball out of the palm of the hand. Being thus prepared you may commence the trick.

Put a ball under each cup, and be careful to get the balls close to the edge of the cup which is farthest from you. Let them stay there while you talk to the audience in some flourishing style, and, in the mean time, get the fourth ball between the *tips* of your second and third fingers; keep those fingers well doubled into the palm, take the right-hand cup between the thumb and forefinger, keeping the rest of the fingers behind it, lift it off the first ball, and as you set it down, neatly slip the fourth ball under it. As you will now have your hands quite empty, it may be as well to make some gesture, which shows that you have nothing concealed.

Take up the first ball, and say that it is going to Europe. Draw your hand quickly back, as if to throw, and while doing so drop the ball into the palm of the hand and catch it between the roots of the fingers, just as the fourth ball was held. Pretend to throw it away, opening your hand as if you did so, but taking care to hold it tightly in the finger-roots. Take up the second cup, slip the first ball under it as before, and proceed to do so with the third, pretending each time to throw the ball away. Take up the cups, and exhibit the three balls which have now come back again.

Now comes a neat little piece of legerdemain. Replace the cups over the balls, and as you do so slip the ball in your hand under the left-hand cup,

so that there will be two balls in it. Take up the right-hand cup, pretend to throw the ball into the middle cup, pick it up and show the two balls there. As you replace the cup, slip the concealed ball into it, so as to bring three under one cup, and proceed as before. When you have finished the performance, by showing the three balls under one cup, get rid of the fourth ball by sticking it on the projecting needle.

PALMING COIN.

This phrase involves an explanation of the first grand principles of the art, without which no feat of mere sleight of hand with coin can be successfully performed, and to accomplish which with ease and rapidity, requires considerable practice and experience. The exhibitor, before commencing, should turn back the sleeves of his coat, to avoid the appearance of passing any thing down the arm, and may then prepare himself for the first illusion in the manner following:—

Place a coin, either a dime or a quarter, on the *tips* of the middle and third fingers, so that it may rest there of its own weight. By now turning the hand with the knuckles uppermost, and quickly closing the fingers into the palm, the coin may be held securely by the contraction of the thumb, and the hand still appear to contain nothing. This is *palming*, and with a little practice nearly every feat of simple legerdemain may be performed by its means. Care, of course, must be taken not to expose the coin by any reversed movement of the hand.

Securing the coin in the right hand, and simultaneously making it appear to pass into the left, the exhibitor may cause it either to disappear altogether, or, by holding a glass in the right hand, bid it fly from the left into the tumbler, where the expansion of the thumb will readily cause it to fall. This feat, when skilfully performed, never fails to elicit surprise and admiration.

The following simple trick may in many cases be employed instead of *palming*.

THE MAGIC COIN.

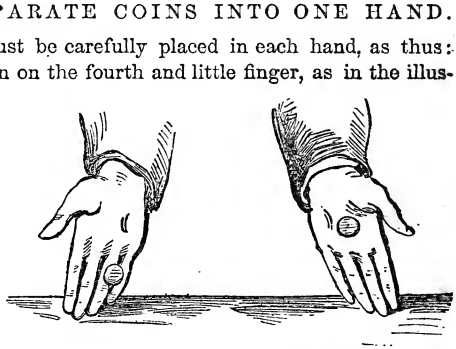
Although a purely sleight of hand trick, it requires but little practice to perform this recreation with dexterity. Take a quarter of a dollar between the thumb and forefinger of the right hand, as represented in the engraving; then, by a rapid twist of the fingers, twirl the coin, by the same motion

that you would use to spin a teetotum; at the same time rapidly close your hand, and the coin will disappear up your coat-sleeve; you can now open your hand, and, much to the astonishment of your audience, the coin will not be there. This capital trick may be varied in a hundred ways. One good way is to take three dimes, or quarters, and concealing one in the palm of your left hand, place the other two, one each between the thumb

and forefinger of each hand; then give the coin in the right hand the twirl, as already described, and, closing both hands quickly, the coin in the right hand will disappear up your sleeve, and the left hand, on being unclosed will be found to contain two quarters, whilst that which *was* in the right hand will have disappeared. Thus you will make the surprised spectators believe that you conjured the coin from the right hand into the left.

TO BRING TWO SEPARATE COINS INTO ONE HAND.

Take two cents, which must be carefully placed in each hand, as thus: The right hand with the coin on the fourth and little finger, as in the illustration. Then place, at a short distance from each other, both hands open on the table, the left palm being level with the fingers of the right. By now suddenly turning the hands over, the cent from the right hand will fly, without being perceived, into the palm of the left, and make the transit appear most unaccountable to the bewildered eyes of the spectators. By placing the audience in front, and not at the side of the exhibitor, this illusion, if neatly performed, can never be detected.



THE MAGIC HANDKERCHIEF.

You take any handkerchief and put a quarter or a dime into it. You fold it up, laying the four corners over it so that it is entirely hidden by the last one. You ask the audience to *touch and feel the coin* inside. You then unfold it, and the coin has disappeared without anybody seeing it removed. The method is as follows:

Take a dime, and privately put a piece of wax on one side of it; place it in the centre of the handkerchief, with *the waxed side up;* at the same time bring the corner of the handkerchief marked A (as represented in Fig. 1), and completely hide the coin; this must be carefully done, or the company will discover the wax on the coin.

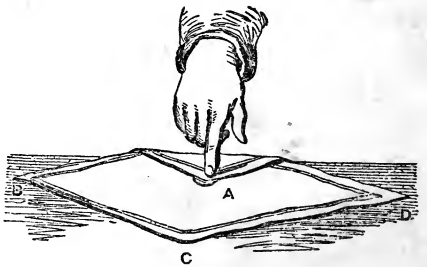


Fig. 1.

Now press the coin very hard, so that by means of the wax it sticks to the handkerchief; then fold the corners, B, C, and D (see Fig. 1), and it will resemble Fig. 2.

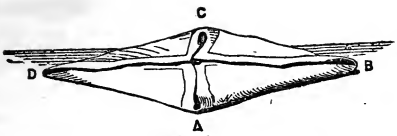


Fig. 2.

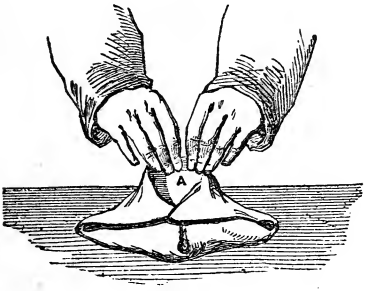


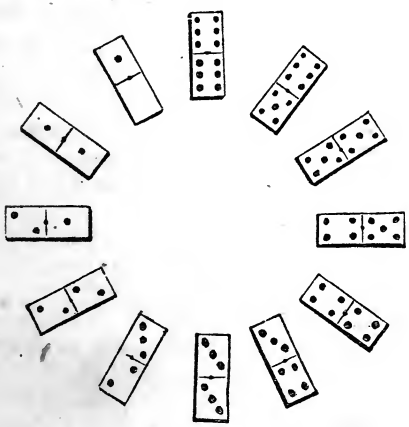
Fig. 3.

Then fold the corners, B, C, and D (see Fig 2), leaving A open. Having done this, take hold of the handkerchief with both hands, as represented in Fig. 3 at the opening, A, and sliding along your fingers at the edge of the same, the handkerchief becomes unfolded, the coin adheres to it, coming into your right hand. Detach it, shake the handkerchief out, and the coin will have disappeared. To convince the audience the coin is in the handkerchief, drop it on the table, and it will sound against the wood. This is an easy trick.

THE DOMINO ORACLE.

This trick, to one not familiar with it, is certainly very surprising.

Arrange twelve of the dominoes as shown in the illustration, and inform any one present, that if he will think of one of the dominoes and remember it, you will point it out to him. Now, supposing the double-deuce is the domino selected, you tell the person who has chosen it that you will count around the circle, and when you have counted twenty, *including the number of spots on the selected domino*, he must tell you to stop, and that your finger will then rest on the domino chosen. The secret is simply this,—you count carelessly around, 1, 2, 3, 4, 5, 6, 7, on any of the dominoes; but at the eighth count you always manage to point to the *double-six*, and after that you continue counting around *regularly to the right;* be sure and remember this, for it is the key of the trick. For example, as we have before said, we will suppose the double-deuce to be the selected domino. We follow the above instructions, and count and point at the



dominoes *promiscuously* the first seven counts; but at the eighth count we point at the double-six, and continue to the right on the six-five, double-five, and so on in succession until we arrive at the double-deuce, when we will be told to stop, because by that time we will have counted sixteen, to which if we add the spots on the domino chosen we will have twenty. This rule holds good no matter what domino happens to be selected. It is perhaps useless to inform our reader that he must not count out loud, or appear to count mentally, but let it seem as if he were only pointing at the dominoes by chance. You must let the person who selects the domino appear to do all the counting.

TO GUESS THE TWO ENDS OF A LINE OF DOMINOES.

Cause a set of dominoes to be shuffled together as much as any of the company may desire. You propose to leave the room in which the audience are assembled, and you assert that from your retreat, be it where it may, you can see, and will be able to tell, the two numbers forming the extremes of a line composed of the entire set, according to the rules established for laying one domino after another in the draw game.

All the magic consists in taking up and carrying away, unknown to every one, one domino (not a double) taken at hazard; for the two numbers on it must be the same as those on the ends of the two outer dominoes. This experiment may be renewed, *ad infinitum*, by your taking each time a different domino, which, of course, changes the numbers to be guessed.

DOMINOES SEEN AND COUNTED THROUGH ALL OBSTACLES.

Lay a set of dominoes on their faces, one beside the other, in one black line. Then say to the company, I will go into the next room, with my eyes as closely covered as you may desire. In my absence, you may take from the line the number of dominoes you please, *provided you take them from that end which is now at my right hand*, and place them at the opposite end, so that, except for the change in the places of the pieces, the line is just the same as before.

At my return, without unbandaging my eyes, I will tell you exactly the number transported from one end to the other, for I shall have seen every thing through the wall and the handkerchief which has covered my eyes. I will do more. From the midst of these dominoes, of which you have changed the position, I will draw one which, by the addition of its spots, will tell you exactly the number which you took from right to left.

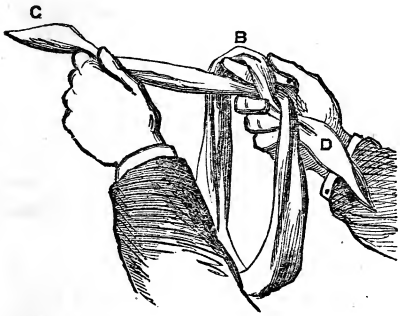
To perform this trick, arrange the first thirteen dominoes, *beginning at the left*, so that the spots on the first form the number *twelve;* of the second, *eleven;* of the third, *ten;* and so on, up to a double-blank, for the thirteenth and last. You place the other dominoes afterwards, in the order in which they happen to present themselves.

If your eyes are bandaged, count with your fingers the dominoes *from left to right*, as far as the thirteenth. The spots on this thirteenth will invariably represent the number of dominoes whose position has been altered.

In performing this and many other tricks, you will employ any ruse you can think of to puzzle those who may try to fathom them.

THE MAGICAL KNOT,

A very amusing trick, consisting in simply tying one knot with two ends of a handkerchief, and, by apparently pulling the ends, untying them again.



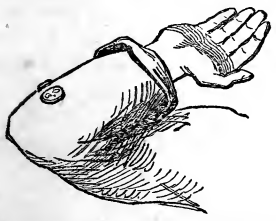
Take two ends of the handkerchief, one in each hand, the ends dropping from the inside of your hands. You simply tie a single knot, when your hands and your handkerchief will be in the position shown in the cut. Instead of pulling the ends C and D, grasp that part marked B with your thumb and forefinger, dropping the end D, and pulling upon the end C and the bend B, when, instead of *really* tying, you unloosen the knot.

All this should be done as quickly as possible, to prevent detection. Examine the engraving closely, and you will more readily understand the explanation.

TO CAUSE A DIME TO APPEAR IN A GLASS.

Having turned up the cuffs of your coat, begin by placing a cent on your elbow and catching it in your hand.

That easy feat performed, allege that you can catch even a smaller coin in a more difficult position.



Then place a dime half-way between elbow and wrist, as in the illustration; suddenly bringing the hand down, the coin drops into your cuff, unseen by any one, and you express the greatest astonishment at its disappearance. Tell the audience to watch, and they will see it drop through the ceiling. Then, taking a tumbler, place it at the side of your arm, and elevating the hand for the purpose, the coin falls jingling into the tumbler, causing great marvel as to how it came there.

A THREADED NEEDLE.

Get a needle, and a piece of cotton about five or six feet long; then thread and draw the cotton through the needle, so that both ends will be even with each other. Lay the doubled cotton over the end of the forefinger, about four inches from the needle, holding the doubled thread firmly between the thumb and middle finger. Now pass the needle through each thread at point A (as seen in Fig. 1), taking care that in passing the needle through the thread you get it exactly through the fibres, so that the one side will be as strong as the other. Then draw the needle and thread through the part of the thread just mentioned, until it comes out straight,

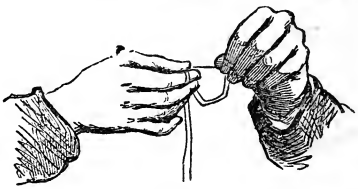


Fig. 1.

and to all appearance there is no knot or catch in the thread where the needle has passed through. You say, "See, I have threaded it once." Then turning your back to the company, you pull the single thread that goes through the eye of the needle, until it comes to the place where you passed the needle through the eye of the fibres.

Draw the loop through the eye, and you have three threads in it; still continue to pull upon the three threads, and when you have pulled the loop part through the eye again you will have five threads through, and so you can keep on till you have the eye as full as it can hold.

Now with the knife cut the threads off about two inches from the needle, and exhibit it to the audience as in Fig. 2.

Fig. 2.

MAGIC MONEY.

This conjuring trick is performed thus:—Procure two quarters and a half-eagle; conceal one of the quarters in the *right* hand; lay the other quarter and the half-eagle on a table, in full view of the audience; now ask for two handkerchiefs; then take the gold-piece up, and pretend to roll it in one of the handkerchiefs; but, in lieu thereof, roll up the quarter, which you had concealed, and retain the gold coin; give the handkerchief to one of the company to hold; now take the quarter off the table, and pretend to roll that up in the second handkerchief; but put up the half-eagle instead; give this handkerchief to another person, and beg him to "hold it tight," while you utter, "Presto! fly!" On opening the handkerchiefs the money will appear to have changed places.

THE STRING AND CORALS.

Take two pieces of white cotton *cord*, precisely alike in length; double each of them separately, so that their ends meet; then tie them together

very neatly, with a bit of fine cotton *thread*, at the part where they double, *i. e.*, the middle. (See A, Fig. 1.)

This must all be done beforehand. When you are going to exhibit the trick, hand round two other pieces of cord, exactly similar in length and appearance to those which you have prepared, but not tied, and desire your company to examine them. You then return to your table, placing these cords at the edge, so that they fall (apparently accidentally) to the ground,

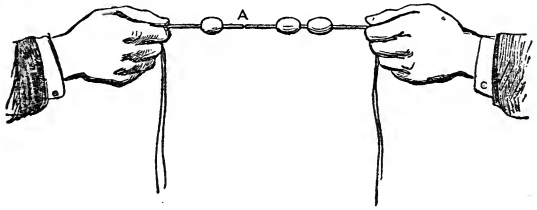


Fig. 1.

behind the table; stoop to pick them up, but take up the prepared ones instead, which you had previously placed there, and lay them on the table. You then take round for examination three wooden balls, each having a hole through the centre, sufficiently large to permit the balls to slip on and off the strings with ease. These balls we will call *corals*. When the corals have undergone a sufficient scrutiny, pass the prepared double cords through them, and give the two ends of one cord to one person to hold, and the two ends of the other to another. (See Fig. 1.) Do not let them pull hard, or

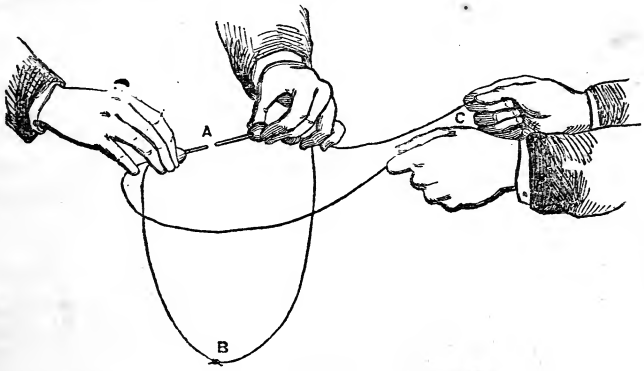


Fig. 2.

the thread will break, and your trick be discovered. Request the two persons to approach each other, and desire each to give you one end of the cord which he holds, leaving to him the choice.

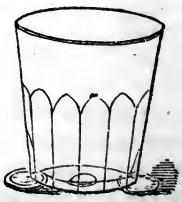
You then say that, to make all fast, you will tie these two ends together, which you do. (See B, Fig. 2.) And returning to each person the end of

the cord next to him (see C, Fig. 2), you state that this trick is performed by the rule of contrary, and that when you desire them to pull hard, they are to slacken, and *vice versâ*, which is likely to create much laughter, as they are certain to make many mistakes at first. During this time you are holding the corals on the forefingers of each hand, and with the other fingers preventing your assistants from separating the cords prematurely, during their mistakes (see A, Fig. 2); you at length desire them, in a loud voice, to slack, when they will pull hard, which will break the thread, the corals remaining in your hands, whilst the strings will remain unbroken.

THE MAGNETIZED CANE

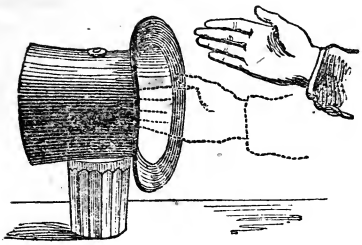
Is a very surprising little fancy, and is calculated to create much astonishment in the drawing-room. Take a piece of black silk thread, or horsehair, about two feet long, and fasten to each end of it bent hooks of a similar color. When unobserved, fasten the hooks in the back part of your pantaloon legs, about two inches below the bend of the knees. Then place the cane (it should be a dark one, and not too heavy) within the inner part of the thread, as represented in the engraving, and by a simple movement of the legs, you can make it dance about and perform a great variety of fantastic movements. At night your audience cannot perceive the thread, and apparently the cane will have no support whatever. The performer should inform the company, before commencing this trick, that he intends to magnetize the cane, and by moving his hands as professors of magnetism do, the motion of the legs will not be noticed.

THE OBEDIENT DIME.



Lay a dime between two half-dollars, and place upon the larger coins a glass, as in the diagram. Remove the dime without displacing either of the half-dollars or the glass. After having placed the glass and coins as indicated, simply scratch the table-cloth with the nail of the forefinger in the direction you would have the dime to move, and it will answer immediately. The table-cloth is necessary; for this reason the trick is best suited to the breakfast or dinner table.

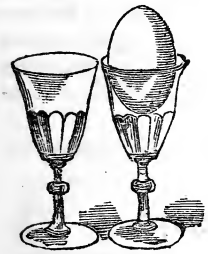
THE HAT AND QUARTER TRICK.



Place a hat, tumbler, and quarter, as represented in the cut; then after making several feints, as if you intended to strike the hat upon the *rim*, give the hat a sharp quick blow upon the *inside of the crown*, and the coin will fall into the tumbler. This is a beautiful trick, if skilfully performed.

TO MAKE A DIME PASS THROUGH A TABLE.

To perform this feat you must have a *dime*, or counter, sewn in the corner of a handkerchief. Take it out of your pocket and request one of the company to lend you a dime, which you must appear to wrap carefully up in the middle of the handkerchief; instead of doing this, however, you keep it in the palm of your hand, and in its place wrap up the corner in which the other dime or counter is sewn in the midst of the handkerchief, and bid the person from whom you borrowed the dime feel that it is there. Then lay it under a hat upon the table, take a glass in the hand in which you have concealed the dime, and hold it under the table; then give three knocks upon the table, at the same time crying, "Presto! come quickly!" drop the dime into the glass, bring the glass from under the table, and exhibit the dime. Lastly, take the handkerchief from under the hat and shake it, taking care to hold it by the corner in which the counter or dime is sewn. This is a very good trick if well managed, and the dime *may be marked* previously.



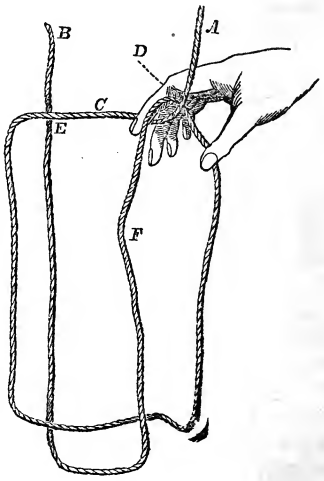
THE ERRATIC EGG.

Transfer the egg from one wine-glass to the other, and back again to its original position, without touching the egg or glasses, or allowing any person or any thing to touch them. To perform this trick, all that you have to do is to blow smartly on one side of the egg, and it will hop into the next glass; repeat this and it will hop back again.

THE MAGIC SPLICE.

Here is a very simple, but not the less effective trick. Take a piece of string or tape, at least six feet in length, and as much longer as can conveniently be obtained, and hold each end with a finger and thumb. In order to render the description more intelligible, we shall call the end which is held in the

right hand A, and that which is held in the left B. Measure the distance to the centre of the string, and take it up so as to make a couple of loops, one depending from each hand. Tell the audience that you are going to cut the string in the middle, and to mend it in half a minute so that no one shall be able to see the junction. They will probably think that you are going to cheat them (as indeed you are), and will demand that one of themselves shall cut the string. Yield the point, under protest, and lay the string on the ground, showing that all is fair, and that the centre of the string will really be cut. Now take up the end A in the same manner, and while you are drawing your left hand along the string, hitch, the middle finger of your right hand under the loop that hangs from A, and bring B across it, as is seen in the illustration. If this is neatly done, the spectators will imagine that A is a continuation of F, for as the two thumbs come upon the points E and D, the real direction of the strings is concealed. In the illustration, the exact form of the string is given, so that the young conjurer may see whether he is right or wrong.



Offer the string to be cut at C, drop the end B, and the string will appear to be divided into two equal parts. Now throw the string F over the back of the forefinger, and tie the ends A and C in a double knot, rolling the strings well up so as to conceal the true character of the knot. Show the spectators that the knot is tied quite tightly, and place your right hand over it. Give a smart pull, and the knotted portion will come off the main string and fall into your hand, where you must conceal it. Now put your left hand over the same place, and with your right convey the short string to your pocket, or rid yourself of it in any way that your ingenuity may suggest.

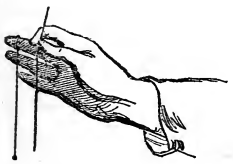
Then remove your left hand, and call attention to the perfect manner in which the string has been mended.

THE NEEDLE AND THREAD TRICK.

Considerable amusement, not unmixed with wonder, may be occasioned among a party of ladies, by a clever performance of this trick. It is most frequently performed by a female, but the effect of it is considerably increased when it is displayed by a youth. A piece of calico, muslin, or linen is taken in the left hand, a needle is threaded in the presence of the spectators, and the usual, or even a double or treble knot, made at the

extremity of one of the ends of it. The operator commences his work by drawing the needle and the thread in it quite through the linen, notwithstanding the knot, and continues to make several stitches in like manner successively.

The mode of performing this seeming wonder is as follows: A bit of thread, about a quarter of a yard long, is turned once round the top of the middle finger of the right hand, upon which a thimble is then placed, to keep it secure. (See illustration.) This must be done privately, and the thread kept concealed, while a needle is threaded with a bit of thread of a similar length. The thread in the needle must have one of its ends drawn up nearly close, and be concealed between the forefinger and thumb; the other should hang down nearly as long as, and by the side of the thread, which is fastened under the thimble, so that these two may appear to be the two ends of the thread.

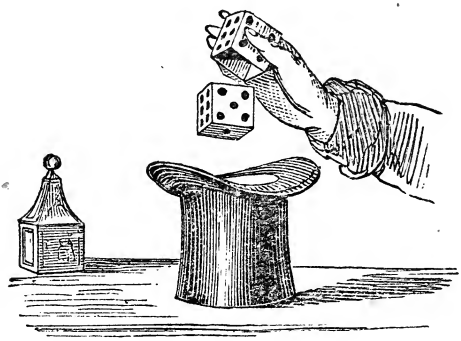


The end of the thread that is fastened under the thimble is then knotted and the performer begins to sew, by moving his hand quickly after he has taken up the stitch. It will appear as though he actually passed the knotted thread through the cloth.

THE "TWENTY CENT" TRICK.

Borrow twenty cents from the company, which display on a plate, having previously prepared five cents in your *left hand*, which you keep concealed. Then take the cents from the plate in the right hand, and, mixing them with the concealed five, give them to one of the company to hold. Ask the possessor to return five to you, which he will do, supposing he then retains only fifteen, although, in reality, he of course has twenty. Now have another cent palmed in your right hand, so that when giving the five cents to another person to hold, you may mix it with that sum, and place the *six* cents in his hand. You may now ask him, as before, to return *one;* when you take it remind him he has only four, and you must now proceed with the most marvellous part of your illusion. Taking the one cent you have just received in the right hand, *palm* it, and pretend to place it in the left. Then, striking the left hand with a rod, bid it fly into the closed hand of the person holding five, or, as he supposes, the *four* cents. On unclosing the hand the cent will of course appear to have been transferred thither, and great amazement will result. Now, taking the five cents, make a more dexterous pass into the left hand, whence you bid them fly into the closed hand of the person holding the supposed fifteen, and whom you now ask to return you the full sum of twenty cents, much to his own wonder and that of the company. If executed with care and dexterity, no illusion can be more effective.

TRICKS REQUIRING SIMPLE APPARATUS.



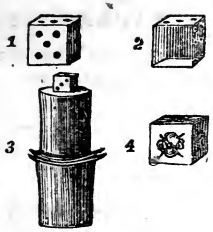
We admit no tricks that are wholly managed by the apparatus, as we think they are unworthy of notice. Therefore, every trick mentioned in the following pages must be carefully practised in private before it is produced in public. The apparatus, of course, cannot be inspected by the audience, and for that reason it is better to mix them with those tricks that have been already mentioned, in order that suspicious persons may be quieted by an occasional permission to inspect the objects used in the performances.

The young conjurer should always vary the mode of performance in the non-essentials, and should study combinations of one trick with another, by which means he will produce more astonishing results than if he restricted himself to the methods mentioned in this work. He should also invariably make a little speech, acknowledging that he is only deceiving the eye and not the mind, and should therefore request the company not to ask any questions, or to demand inspection of any of his apparatus.

THE DIE TRICK.

Get a wooden die about two inches and a half square (1), and a hollow tin die exactly the size of the wooden one, but without one of the sides (2). Then paint them both exactly alike, as in the engraving. It will be better to let an *accidental* flaw appear on the same side of each. Then get a tin cover (4) that exactly fits the dice. Now for the trick itself.

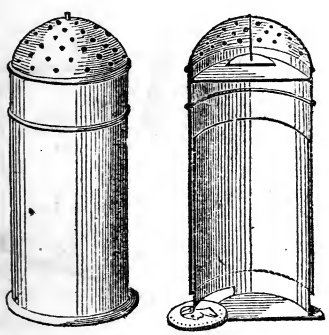
Borrow two hats, and while you turn your back upon the audience as you go to your table, slip into one of them the false die. Place both hats on the table, and send round the real die and cover for inspection. When they are returned say, "Now, ladies and gentlemen, it is my intention to place these hats one above another, thus." You then place the two hats as in No. 3, the hollow die being in the bottom hat. "I shall then cover the die



thus," which you do, "and after I have knocked on the cover I shall take it off, and you will find that the die is not under the cover, as it is now," taking it off, "but inside the hat, like this." You then put the real die into the hat. "You do not believe me, ladies and gentlemen, but I will soon convince you." You then take out the false die, and, replacing the upper hat, put the die on the upper hat (of course with the open side downward), and place the cover over it. Pick up your conjuring wand, give it a few flourishes, and bring it down on the cover. Grasp the cover tightly near the bottom, when both cover and false die will come up together; put the end of your wand into them and give them a good rattle. Then knock off the upper hat with a blow of the wand, and push the lower one off the table, so that the die tumbles out of it. Always use plenty of gesture about your tricks.

THE PEPPER-BOX TRICK.

Procure a common pepper-box, and get a tinman to unsolder the bottom, and then fasten on to it a tube of tin that will just fit the inside of the box, like a telescope. At the bottom side of this tube a slit must be cut that will let a quarter slip through. In the lid of the box a duplicate top is to be fastened, leaving inside a piece of tin, that will rattle when shaken. Now for the trick. Take the box in the *left* hand, ask one of the company for a quarter, and to mark it that it may be identified. With the *right* hand draw off the lid, and request that the money be put into the box. It will of course slip through into your left hand. Put on the lid and push up the telescope bottom quickly, and passing the box to the right hand, rattle it, and ask where the money shall fly to. Have a cup at hand (near the left), and, as a feint, say "Here it is!" at the same time letting the money fall into the cup. "Presto! Fly!" It is now again in the box, and by a rattle it appears so. Remember all the while to hold the money fast in the cup, to prevent detection. "Presto! Fly again!" It is now down Willy's throat—is it not so? Place the cup to his ear; out it falls! Well, I never! Is it the same quarter? To be sure it is; there's the mark! This completes the pepper-box trick; but the routine indicated for its performance can be easily varied by any adept at legerdemain.



TO PASS SIX CENTS THROUGH A TABLE.

When this trick is well done it is one of the best "table moves" that can be shown for the amusement of a "small party." It is performed thus:

Get a brazier to cut out all the interior of five cents, only leaving the rims. He must then bore out nearly all the interior of a sixth cent, merely leaving a shell of copper at the top. A long rivet must then be let into the rim, as shown in Fig. 1, B, and a hole must be drilled in each of the five rings, as in C. The rivet is to be passed through the holes in the rings, and fastened below, so that all the rings can play easily upon it. A is a section of the entire apparatus, the dotted lines representing the rivet. They can then be placed as shown in Fig. 2, B, and no one will imagine that they are only shams, as you can rattle them or move them about upon each other. A leathern cover, Fig. 2, C, is then made, which then passes easily over the heap of cents, but, being pliable, is capable of picking up the hollow cents with it, when it is held firmly. To the under surface of the table you fasten a little shelf, Fig. 2, A, which moves on a hinge, and is let fall by placing the foot on the pedal, D, which draws the catch.

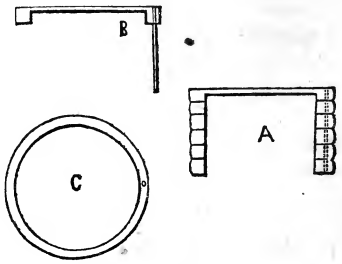


Fig. 1.

To perform this trick, place six real cents on the little shelf, and have the sham cents on the table. Take them up and rattle them, and put them down as in Fig. 2, B. Keep a sixpence in the palm of your hand, pick up the sham cents, and as you put them down slip the sixpence under them. Take the cover, and put it over the sham cents, and make a short speech, and knock the cover with your wand, at the same time pressing the pedal with your foot, which will cause all the six real cents to tumble down with a great crash. Take up the cover and false cents together, put the end of your wand into them and hold them up triumphantly, showing the spectators that the six cents have been replaced by a silver sixpence. While you are picking up the cents, slip the sham ones out of the cover into your left hand, and take some opportunity of letting the empty cover roll to-

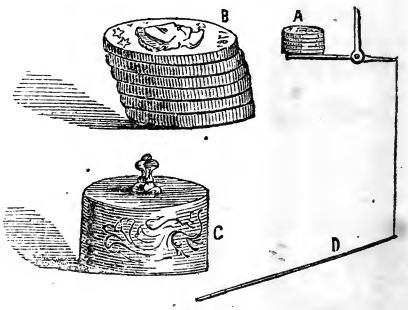


Fig. 2.

wards the audience, one of whom you ask to pick it up and bring it to you. This manœuvre generally disarms all suspicion, for the picker-up is sure to examine it very closely.

We have only given mere outlines of this really excellent trick, which may be varied in a hundred ways, and is capable of combination with other tricks to a large extent. For the pedal may be substituted a lever running immediately under the surface of the table, if the performer prefers to have a short cloth on it. There should be always two cloths on the table; the lower one thick and soft, to prevent jingling of objects, and the upper one white, as it displays every thing better than a colored one. The ingenuity of the young conjurer will easily find methods of varying this trick. The following is a capital variation.

THE MYSTERIOUS COIN.

After performing the last trick, you may address the company again, and say: "I will show you the nature of this trick, if you will only look sharp enough to see how it is done. Therefore, watch closely, and if you have *very* penetrating eyes, you may see the money go through this glass and fall upon the plate, and from that through the table into my hand. I will do it deliberately, so that you may have every opportunity of detecting the deception, which will make you as wise as myself."

Now you take a plate and place it on the table; place upon that a wine-glass upside down, and take the empty leathern case and hold it before the audience, to convince them that nothing is inside. Place it, in a careless manner, over the riveted money, which you had before put a little aside from the view of the spectators. Place a small ball on the bottom of the glass: then take the case with the concealed coins therein, and place them over the ball, which will be secreted therein. Now tell the company to keep a sharp look-out, and they may discover the whole process. Take the loose coins and throw them on the table; bring them again under the table, and exchange them for a ball previously deposited on the shelf, and lay the same upon the table. Remove the case alone, which, of course, will leave the money exposed on the top of the glass. "Now," says the performer, as he brings his hand from under the table, "I have made the ball go through the wine-glass, plate, and table, into my hand, and I presume that you have discovered the whole mystery; but if not, I will give you another opportunity, and will return the money whence it came." Cover the money with the case, and bring the ball which you previously exposed to the spectator under the table, and exchange it for the money on the shelf, which you again toss upon the table. Remove the case with the coins concealed therein, and the ball will appear on the top of the glass, as at first; then bring your hand from under the table, and throw the real coins upon the table. Our performer makes the following concluding speech: "Now, as you have, I suppose, discovered the whole mystery, I hope, ladies, that *you* will not set up an opposition line against me; since, if you do, you will very seriously

injure my pockets, and, of course, *attract* all the company, and leave me in an empty house with empty pockets."

TO CHANGE A DIME TO A QUARTER

This is quite a simple parlor trick. In fact, it surprises on account of its very simplicity. Procure two pieces of marbled paper, about seven inches square, and having put the marble backs of the paper together, cut them in the shape of an oblong square. (See Fig. 1.) Be very careful to have them exactly the same size, as the success of the trick depends, in a great measure, upon the regularity of the paper. After cutting the paper in the manner described, place a dime in the centre of one of the pieces, at the place marked A, then fold it carefully over at the crease on the side marked B, and also again at the side marked D. When you have done this, turn down the end marked C upon the centre A, and again fold over on F. When this is accomplished, you will discover that you have formed a small parcel (the same shape as Fig. 2), with a dime in the centre. You then place a quarter of a dollar in the centre of the other piece of paper, and fold it up exactly the same size and shape as the first piece. Next gum the two parcels together at the back of the ends marked F, Fig. 2, and the sides will be so even that the parcels will appear as one. You can then open the side of the paper containing the dime and show it to your audience, informing them that you are going to open a mint on a small plan, and coin a quarter from a dime. Then mutter some cabalistic words and dexterously turn over the side containing the quarter, and upon opening the paper, to the astonishment of the company, instead of a dime they will behold a genuine quarter.

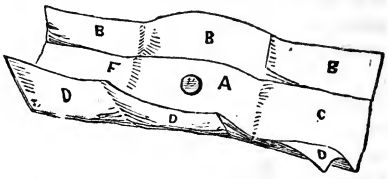


Fig. 1.

Fig. 2.

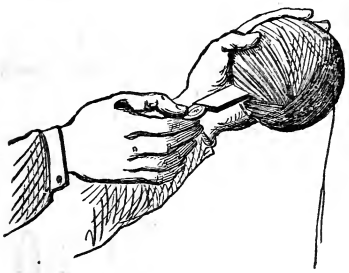
THE MAGIC CUPS.

Procure two tin cups without handles, quite plain, straight sides, with the bottoms sunk a quarter of an inch. On the bottoms spread some glue, and completely cover the glue with some kind of bird-seed, only so as not to be seen when standing in an ordinary position. Have ready a bag filled with the same kind of seed as you used in covering the bottoms. Put the cups on the table; also two hats. Put one cup then into the bag, appear to fill it, and take it out turned bottom upwards, when it will look as if it had been filled. Put it in that position under one hat; in doing so turn it over. Then take the other empty cup, put that under the other hat; and, in doing

so, turn that over, which, of course, must be invisible to the audience. Then remove the hat and the cups will appear to have changed places.

TO PASS A QUARTER INTO A BALL OF WORSTED.

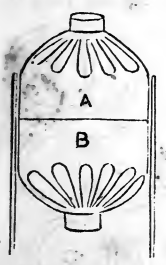
Like all the best magical tricks, this is one of the most simple. A marked quarter is borrowed, a large ball of worsted is brought. Presto! the worsted is unwound, and out falls the money, that a minute before was in its owner's pocket. Here is the solution:—First, procure a few skeins of *thick* worsted, next a piece of tin in the shape of a flat tube, large enough for the quarter to pass through, and about four inches long.



Now wind the worsted on one end of the tube, to a good-sized ball, having a quarter of your own in your *right* hand. (See engraving.) You may now show the trick. Place the worsted anywhere out of sight, borrow a marked quarter, then taking it in your *left* hand, looking at it, and saying, "It is good," place the one in your *right* hand on the end of the table furthest from the company; then fetch the worsted; while so doing drop the marked quarter through the tube, pull it out, and wind the worsted a little to conceal the hole; then put the ball into a tumbler, and taking the quarter you left on the table, show it to the company (who will imagine it to be the borrowed quarter), say, "Presto! fly! pass!" Give the end of the ball to one of the audience, request them to unwind it, which being done, the money will fall out, to the astonishment of all who see this trick of legerdemain.

THE MAGIC CANISTER.

Get a tinman to make a double canister, such as is shown in the engraving, with an opening in each end. This must so slide within a tin tube, that either end can be concealed within it alternately, as seen in the engraving, where the end A is shown, and B is concealed. In this position it looks like an ordinary canister. The interior is divided into two parts. Into B put a piece of cambric made to look like a handkerchief.

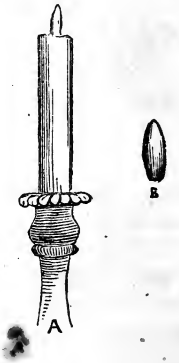


Borrow a cambric handkerchief, and say, "Now, ladies and gentlemen, I shall burn this handkerchief to ashes, place them in this canister (so saying, you put it into A), and when I have uttered a spell, it will be restored perfectly whole. Will the owner say what mark it has?" While the audience are looking towards the owner, you turn the canister over, and push up the canister until the shoulder of B is on a level with the top of the tube. When the mark has been declared,

you open B, take out the cambric, and pretend to verify the mark. You then put it into a candle-flame, and when it has burned entirely to ashes, put the ashes into B, shut it up, and rapidly reverse it as you turn round to your audience, so that A is uppermost again. Then utter any nonsense you like, open A, and take out the handkerchief uninjured. It rather adds to the trick if you drop a little eau de cologne into A before performing the trick. With this simple apparatus many wonderful tricks may be performed.

EATABLE CANDLE-ENDS.

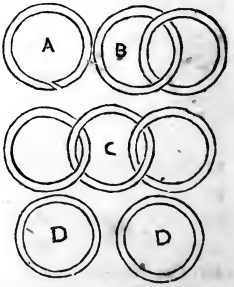
Take a large apple, and cut out a few pieces in the shape of candle-ends, A, round at the bottom and flat at the top, in fact, as much like a piece of candle as possible. Now cut some slips from a sweet almond, B, as near as you can to resemble a wick, and stick them into the imitation candles. Light them for an instant, to make the tops black, blow them out, and they are ready for the trick. One or two should be artfully placed in a snuffer-tray, or candlestick; you then inform your friends that during your "travels in the Russian Empire," you learned, like the Russians, to be fond of candles; at the same time lighting your artificial candles (the almonds will readily take fire, and flame for a few seconds), pop them into your mouth, and swallow them, one after the other.



THE MAGIC RINGS.

Get a blacksmith to make a number of rings, about six or seven inches in diameter, as in the cut. A is made with a spring opening on one side, B is a set of two rings forged permanently within each other, C is a set of three rings formed in the same manner, and D D are two simple rings. The rings should be about the thickness of a rather large black-lead pencil.

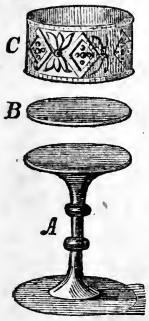
Lay the rings on one another, and they will all appear to be separate and distinct. D D should be the uppermost rings, then B, then A, and then C. Hand around D for inspection, and if any more are desired, hand round the other D. When returned, hang them over your left arm, or grasp them in your hand, and tell the company that you are going to weave all the rings together. You clash them together, and after going through some complicated movements, bring out B, which the spectators will think you have just fastened together. Hand them round. When they are returned mix them all up, and bring out C. Then take A in your hand, and passing one of the outer rings of C through the opening, you have four rings together. Then



add D and you have five. Take off D and substitute B, which will give you six. So you go on weaving them into all kinds of fantastic shapes. You must always conceal the joint in A with your thumb, and contrive as often as you can to have one at least of the rings D at liberty. This is a capital trick, and may be diversified to any extent, especially if the number of rings is increased.

THE BURNED HANDKERCHIEF RESTORED.

Get a flat-topped stand, such as is shown at A, and make a neat pasteboard or tin cover, as is seen at C, and be sure to ornament it with various showy devices. The cover must slip very easily over the stand. Cut a flat circular plate, B, the least bit wider than the top of A, and just large enough to slip easily into C. Here is all your apparatus.

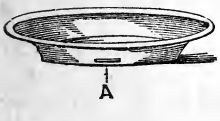


Before you show this trick, place in your pocket a piece of white rag that looks like a handkerchief. Borrow a clean white cambric handkerchief from among the audience, and just before you receive it, conceal in your hand the white rag. Have the apparatus ready on a side-table, with the movable plate laid on the stand. Lay the handkerchief on the plate, place the cover over the handkerchief, and press it down with a smart slap.

Now take off the cover, squeezing it well so as to take up the plate as you do so; put your hand into it as if about to pull out the handkerchief, and substitute in its stead the white rag. Lay the rag on the stand, apply a match to it, and let it burn to ashes. Replace the cover on the stand, and press it down. Then loosen the grasp of the hand and the plate will fall on the stand, completely concealing the ashes. Lift the cover gently, when the handkerchief will fall upon the plate, and may be restored unhurt to the owner.

THE MULTIPLIED MONEY.

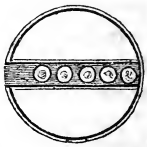
Collect two or three dozen cents, and get a cheap and showy-looking salver at a hardware store. Take the salver to some intelligent smith, and get him to make a false bottom to it in the following manner. Give him one of the cents and let him cut two slips of tin about twice as deep as the coins are thick. Then let him set them on their edges, parallel to each other, leaving just room for the cents to slide easily between them, and solder them on the bottom of the salver. Then let the plate which forms the false bottom be soldered upon the slips, and a narrow slip of the same metal run round the edges, with the exception of the slit shown in the illustration, at A, which corresponds to the extremity of the space enclosed by the two parallel slips.



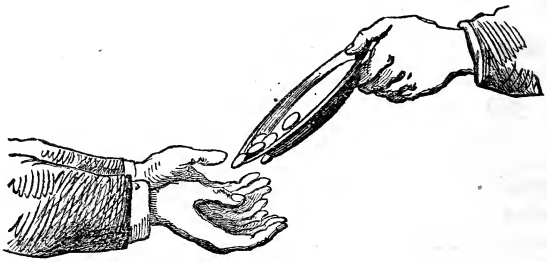
It is now evident that if some of the coins are pushed into the open slit,

they will lie in a row across the bottom of the salver, the number being regulated by the diameter of the salver. If the inside of the groove in which they lie be lined with soft woollen cloth, the coins will be prevented from rattling, which is a point of some importance.

When you are about to perform this trick, have the salver nicely polished, so as to look as like real silver as possible. Slip into the groove six of the coins, and then stand the salver on a side-table, as if it were one of those which belonged to the house. Call one of the audience, place eighteen coins in the salver, taking care to turn the slit *towards* you; tell him to hold out both his hands, and pour the coins into them. Then tell him to return the coins one by one, counting them aloud, and to make them ring upon the salver, so that every one shall hear them. Pour them back into his hands and make him repeat the process.



While he is doing so, shift the salver quietly round until the slit is turned from you and towards his hands, and take care to hold the salver so low that the projecting rim throws the slit into shadow, and conceals it from his view. Then tell him to cover them up at once, when you put them



into his hand, in order to prevent you from playing any tricks, and pass them smartly into the palms of his hands, making him close them at once. Of course, the six coins that you have placed in the slit will tumble out and mingle with the others in the platter, and in the hurry will not be noticed, so that he will have twenty-four in his hands.

Put the salver down, and take up six of the remaining coins, one by one, ringing them on the salver as you do so. Pick them up, pretend to close the right hand upon them, but pass them really into the left and convey them away. Hold your right hand over the closed hands of the person who has the coins, strike smartly with your left hand in your right, say "Pass!" and open your hand, when it will be seen empty. Offer the salver again for the coins, and when they are counted, twenty-four will be found in his hands. In order to insure the proper position of the salver, it will be as well to have some mark on the upper edge, just over the slit.

THE LOST RING FOUND.

This is a simple and a pretty trick, requiring little apparatus,—a piece of elastic thread and a few rings being all that you need. Go to a jeweller's, or even to a toymaker's, and buy a set of showy rings, all alike. You may get them for a few cents each. Take a piece of elastic thread about three or four inches in length, fasten one end to one of the rings, and the other to the inside of your coat-sleeve, taking care to have it of such a length that it permits the ring to be placed on the finger, and that when the ring is removed it is pulled up the sleeve so as to be concealed from every one.

Before you begin the trick, furnish yourself with a few lemons, and in each of them cut crosswise a little slit in the middle, and push one of the rings into the slit until it lies in the very centre of the lemon. Take care to wear one of the rings during the whole evening, and make it as conspicuous as possible; and just before commencing this trick quietly remove the ring, and slip on your finger the one that is attached to the elastic thread. Ask if there are any lemons in the house, and have your own brought in a basket. Also ask for a piece of tape and a bodkin.

Get the audience to choose a lemon, take it in your hands, and send the rest away. Then take a knife and cut the lemon into slices, nearly, but not quite severing them, and hold it so that if any thing were between the slices it would fall out. Of course you take care that the ring which you have inserted remains in the middle slice. Now slip the end of the tape through the eye of the bodkin, and push it lengthwise through the lemon, so that it passes through the ring. Give both ends of the tape to be held, and tell the holders to stand so as to keep the tape at full stretch.

Now slip the ring off your finger and hold it between the forefinger and thumb, taking care to hold it so that the spectators cannot see the thread. Point your hand towards the lemon, suddenly spread the fingers, and away flies the ring up your sleeve. Look into your hand as if surprised at the disappearance of the ring, show that it is empty, and then go to the lemon. Separate the divisions one by one, and push them apart. Take each outer slice alternately and pull it off the tape, keeping the central slice to the last. When you come to this, the ring will pull against the tape; you wonder what is the matter with it; you take your knife and cut the slice gradually down, taking care to destroy the slit through which the ring was introduced, and continue to cut until the metal becomes visible. Then let any one disengage the lemon from the imbedded ring, and the audience will think that you have flung it into the lemon and upon the tape.

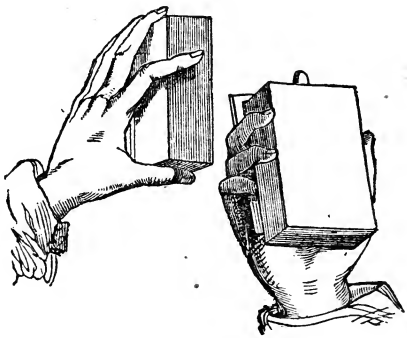
In this short account of conjuring, we have purposely avoided such tricks as require expensive apparatus. Such apparatus is either entirely beyond a boy's reach, or at all events he ought not to be encouraged in the notion of spending much money on objects of no real use. A boy of any ingenuity will make the greater part of the apparatus himself. We have mentioned no machinery that need cost more than a dollar at the outside, and not that, if a boy is acquainted with the use of tools.

TRICKS WITH CARDS.

ALTHOUGH proficiency in games with cards is, in our opinion, a most pernicious accomplishment for youth, and one which cannot be too severely reprobated, we do not consider SLEIGHT-OF-HAND TRICKS with a pack of cards at all objectionable, but rather a source of much harmless amusement; and, under this impression, we do not hesitate to insert the following series of excellent deceptions and sleight-of-hand tricks.

TO MAKE THE PASS.

This is a necessary beginning for card tricks. "Making the pass" is the technical term for shifting either the top or the bottom card to any place in the pack that you like. It is almost impossible to describe it, and we can only say that it will be learned better, in five minutes, from a friend, than in as many hours from a book. As, however, a friend is not always to be found who can perform the pass, we will endeavor to describe it.



The cards are held in both hands, right hand underneath and left above, as in the engraving, where, as the *bottom* card is to be raised to the top, the little finger is seen between that card and those above it. By a quick movement of the right hand, the bottom card is slipped away towards the left, and is placed upon the top card, under shadow of the left hand, which is raised for the moment to allow of its passage.

This movement must be assiduously practised before it is exhibited in public, as nothing looks more awkward than to see it clumsily performed, in which case two or three cards generally tumble on the floor.

THE NERVE TRICK.

Let one of the company select a card, and when the person who has taken it puts it in the pack, make the pass, and place it at the bottom; cut

them in half; give the party that half which contains his card at the bottom, and desire him to hold it between his finger and thumb, just at the corner; bid him pinch them as tight as he can; then strike them sharply, and they will all fall to the ground, except the bottom one, which is the card he has chosen. This is a very curious trick, and, if well done, is really astonishing. It is a great improvement of this trick to put the chosen card at the top of the pack, and turn the cards face upward, so that when you strike, the choosing party's card will remain in his hand, actually staring him in the face.

THE KNAVES AND THE CONSTABLE.

Select the four knaves from a pack of cards, and either of the kings to act as constable. Conceal one of the knaves at the bottom of the pack, and lay the other three with the constable down upon the table. Then say, "Three knaves went to rob a house; one got in at the parlor window" (putting one knave at the bottom of the pack, taking care not to lift the pack so high that the knave already at the bottom can be seen), "one got into the first floor window" (putting another knave into the middle of the pack), "and one got in at the garret window" (putting the third knave in at the top of the pack.) "The constable, being determined to capture them, closely follows the last knave" (putting the king also upon the top of the pack). You then direct as many of the company to cut the cards as please, and you state that you have no doubt the constable has succeeded in catching them, which will be evident upon your spreading out the pack in your hands, as the king and three knaves will be found together. A very little dexterity only is necessary to enable you to convey a knave secretly to the bottom of the pack.

THE TURN-OVER FEAT.

When you have found a card chosen, which you have previously forced, or any card that has been drawn, and which you have discovered by the means before described, in order to finish your trick cleverly, convey the card privately to the top of the pack; get all the other cards even with each other, but let the edge of your top card project a little over the rest; hold them between your finger and thumb, about two feet from the table; let them drop, and the top card (which must be, as we have said, the one drawn) will fall with its face uppermost, and all the rest with their faces towards the table.

TO TELL A CARD THOUGHT OF BLINDFOLD.

Take twenty-one cards, and lay them down in three rows, with their faces upward; *i. e.*, when you have laid out three, begin again at the left hand, and lay one card upon the first, and so on to the right hand; then begin on the left hand again, and so go on until you have laid out the twenty-

one cards in three heaps, at the same time requesting any one to think of a card. When you have laid them out, ask him which heap his card is in; then lay that heap in the middle between the other two. This done, lay them out again in three heaps as before, and again request him to notice where his noted card goes, and put that heap in the middle, as before. Then, taking up the cards with their backs toward you, take off the uppermost card, and reckon it one; take off another, which reckon two; and thus proceed till you come to the eleventh, which will invariably prove to be the card thought of. You must never lay out your cards less than three times, but as often above that number as you please. This trick may be done without your seeing the cards at all, if you handle and count them carefully. To diversify the trick, you may use a different number of cards, but the number chosen must be divisible by three, and the middle card, after they have been thrice dealt as directed, will always be the one thought of; for instance, if done with fifteen cards, it must be the eighth, and so on; when the number is even, it must be the exact half; as, if it be twenty-four, the card thought of will be the twelfth, &c.

THE SHUFFLED SEVEN.

Desire a person to remember a card and its place in the pack; then, in a dexterous manner, convey a certain number of the cards from the top to the bottom, and subtract them, in your mind, from the number of the pack; for example, the pack consists of fifty-two cards, and you have conveyed seven to the bottom; tell the person the card he has thought of will be the forty-fifth, reckoning from the number of the card, the place of which he has to name; thus, if he says it is the ninth, you go on counting nine, ten, eleven, &c., and the card he thought of will be exactly the forty-fifth, as you announced.

TO NAME THE POSITION OF A CARD.

You will take a pack, which you will present to some one in the company, desiring him to shuffle the cards well, and to give them to any one else whom he pleases, to shuffle also. You will then cause it to be cut by several persons: then propose to some one to take the pack, think of a card, and to remember it, and also the position where it is placed, counting one, two, three, four, and so on, from the bottom of the pack as far as, and including, the card thought of. You may offer to go into another room while this is done, or have your eyes bandaged, assuring the company that you will, if they desire it, announce beforehand the number at which the card thought of will be found.

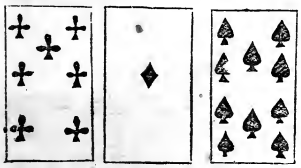
Now, supposing that the person selecting the card stops at 13, and that this thirteenth card from the bottom is the Queen of Hearts, and supposing also, that the number you have put down beforehand be 24; you will return to the room, or remove your handkerchief, as the case may be, and, without putting any question to the person who has thought of the

card, you will ask for the pack, on which you will rest your nose, as if you meant to smell out the secret. Then putting your hands behind your back, or under the table, so that they cannot be seen, you will take away from the bottom of the pack *twenty-three* cards—that is, one less than the number you marked down beforehand. You will place them on top of the remainder, taking care not to put one more or less, which would cause a failure. This done, return the pack to the person who thought of a card, requesting him to count the cards from the top, beginning with the number of the card he thought of. Thus, if that card were the thirteenth, he will commence counting fourteen, and so on. When he has called twenty-three, stop him, telling him that the number you marked down was twenty-four; and that the twenty-fourth card, which he is about to take up, is the Queen of Hearts; which he will find to be correct.

Observe and be sure and have the number you name greater than that of the first position of the card in the pack: for instance, twenty-four is greater than thirteen.

THE THREE PACKETS.

Tell a person to choose as he pleases three cards from a euchre pack, informing him that the ace counts for eleven, the picture cards for ten, and the others according to the number of spots. When he has chosen these three, tell him to put them on the table, and to place on each as many cards as spots are required to make fifteen. That is to say, in the example, eight cards would have to be put on the seven of clubs, four cards on the ace, and five above the ten. Let him return you the rest of the pack, and (while pretending to count something in them) count how many remain. Add sixteen to this number, and you will have the number of spots in the three bottom cards, as may be seen in this example where twelve cards remain, to which number add sixteen, and the amount (twenty-eight) is the number on the three cards.



LIKE WITH LIKE, OR HOW TO KEEP A HOTEL.

Pick out all the aces and picture cards, and then place any ordinary card upon the table. "This card," you say, "we will call a tavern." You commence your story as follows:

"On a dark night there come four farmers to this tavern, and ask for a night's lodging. As none of the landlord's rooms are occupied, and as he has four of them, he shows each of the farmers to one of the rooms, and goes quietly to bed." (Here you place the four knaves around the card which represents the tavern, and proceed.)

"Not long afterwards, four police officers knock at the door, and request

also a night's lodging. As the landlord has now no chamber that is unoccupied, he puts an officer in with each of the farmers." (Here you place the four aces upon the four knaves.)

"Presently four fine gentlemen come along, and these want a night's lodging. Our host is now in great embarrassment, but there is nothing left for him to do, but to put a gentleman in each of the four occupied chambers." (Here you lay a king upon each ace.)

"Thus far matters went tolerably well, although not meeting with general approbation; but now come four fine ladies, who also must have a night's lodging. The landlord is now beside himself with perplexity; indeed he fairly loses his senses, for the stupid fellow actually quarters a lady in each of the already occupied chambers." (Here you place the queens upon the four other cards.)

"The ladies are highly indignant. 'Could he not put like and like together?' they ask. That is what he ought to do, but police officers and farmers, gentlemen and ladies—the fellow is out of his wits!

"'Well,' cried the landlord, at last, 'if you are agreed, I will lodge you like with like.' All readily consent, and soon all the farmers are lodged in one chamber, all the officers in another, all the gentlemen in a third, and all the ladies in a fourth."

While you are saying this, you lay the four heaps one upon another and let the company cut them as often as they choose. But notwithstanding all their cutting, if you now tell them off in order from the bottom of the pack, and place them about the tavern, all the knaves will lie in one heap, all the aces in another, and so on.

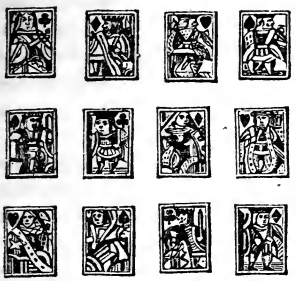
THE FOUR KNAVES.

Take the four knaves, and upon the lower half of the first knave place the upper half of the second, rectangularly; upon the lower half of the second knave, place the upper half of the third, also rectangularly; then the upper half of the fourth knave upon the under half of the third; and lastly, thrust the under half of the fourth knave under the upper half of the first, and the trick is finished.

THE MYSTIC COURTS OF ZOROASTER.

Sort the twelve court cards from the pack, excluding the aces, and place them in three rows, that is to say, with four in each row. Beginning with the fourth card in the bottom row on the right, take them up longways, that is, from the bottom to the top, one over the other, the jack of diamonds over the king of hearts, and so on, and offer them to persons to

cut. It is a matter of indifference how often they are thus divided; but you must be particular and have them cut without shuffling. Now deal them out in four divisions, and, strange as it may seem, the king, queen, and knave of each suit will be found together. The key to this inscrutable mystery consists in simply observing the following arrangement in disposing the cards at first: place one of each suit in the upper row, begin the next row with the same suit that you closed with in the first, and commence the third or last row with a court card of the same suit that terminated the second. By thus arranging the cards you will not have two of any one suit in any of the rows, either vertically or horizontally. The table shows exactly how the cards should be placed in order to perform the trick successfully.



On now following the above directions in taking up the cards the result will be as described. Although this illusion is one easily performed, we never yet saw it practised without it exciting the wonder and amazement of the spectators; and the principle on which this is achieved, owing to the apparent consequence of the suits, has successfully baffled the calculations even of the first investigators of the art.

THE CHOSEN ONE OF FORTY-EIGHT DISCOVERED.

Take forty-eight cards, and beginning at the *left top* corner, deal them out in six rows of eight each; then, as they lie upon the table, there will be eight lines of six each the one way, and six of eight each the other way. The first we will call *lines*, and the other *rows;* and this distinction being clearly understood, we may now begin "to show the trick." Ask one of the company to choose a card. This done, ask which line it is in. When answered, be particular to remember the top card of the line, for this one card is the key to the whole trick—so "don't forget it." The cards are now to be taken up exactly in the reverse order to that in which they were laid down. That is, you begin at the *right* bottom corner, picking the cards up to the right top corner. This done, the pack must be again distributed in the same order as before, and the question, "Which line is the chosen card in?" repeated. Receiving the reply, you can instantly fix on the chosen card. The explanation is this: Remember the top card of the *line* the card is stated to be in. Then, when the pack is again laid out, it will be observed that all the cards that previously were in a *line*, *one under the other*, are now all in a *row*, *side by side* of each other. Now, seeing the position of the key card, that is, the one you had specially to remember, you will know that all the cards belonging to the *line* of which it was the topmost, now

follow it in a *row;* consequently, the six cards that were in one line, are now distributed or divided into six lines, one of its cards falling into each of the following lines. When the reply is given to the second interrogation, the card thought of can be instantly picked out, because the line now given only contains one that was in the original line; consequently, the card that is now in it, and which also formed part of the original line, must be the one chosen. After a little practice, half-a-dozen people may each choose a card at the same time, and you will be perfectly able to reveal all.

Observe—that (after the cards have been arranged the second time) when the *line* containing the chosen card is on the *right* of the key card, the chosen card will be in the *row above* the key card. But when the chosen card is to the *left* of the key card it will be found in the same row.

TO MAKE ANOTHER PERSON DRAW THE CARDS YOU CALL FOR.

Take the cards, shuffle them, and spread them out, face downwards, upon the table, without entirely separating them. Before doing this, however, you must carefully note the bottom card.

You now say to the person to whom you wish to display your skill, "I will now ask you to give me certain cards, which I will name to you beforehand. The cards which I ask for, you must give me from this heap, the faces of which neither you nor I have seen, and yet in the end I shall have all the cards that I direct you to give me."

The person you address will, of course, be very much astonished at this, and will refuse to believe you. You assume a confident air, however, saying, "Look sharp!"

You then call for the card which you know is the undermost one, say the seven of hearts. Suppose now the person gives you the queen of spades, you boldly call out for your next card, "Queen of spades!" the other not knowing that you have it already in your hand. He gives you, perhaps, the king of hearts, and you at once ask for this as your next card. He now gives you the ace of clubs. In this way you can ask for any number of cards, but these are enough for explanation. Now you say, "The last card that I want is the ace of clubs, but this I will find out for myself, by means of my very nice sense of smell."

Hereupon, with a grave face, you commence shuffling around among the cards, until you reach the bottom one, which is the seven of hearts. This you take from the table, place it first in order among the cards in your hand, and you are now able to display all the cards that you have directed him to give you.

TO CALL FOR ANY CARD IN THE PACK.

This trick, which requires very little practice, or indeed understanding, to perform, is done in the following manner: Having privately seen a card, put it at the bottom of the pack, then shuffle the cards till it comes to the

bottom again, then put the cards behind you and say, "Here I call for," naming the bottom card, which you have seen; and as you hold them behind you, turn the top card with its face upward; then hold forth the cards, and as you hold them you may see what the next card is. Then put the cards behind you again, and take the top card and put it at the bottom, with its face downward; and turn the next card with its face upward, and whilst you are doing this, say, "Here I call for," naming the card you saw last. Then hold forth the cards again, showing the bottom card, which will be that you call for; then put the cards behind you again, and proceed in the same manner as you did before. You may, by this method, go through them all, and call for all the cards in the pack, to the admiration of the beholders, who will be surprised how you could find them out when you hold them behind you.

TO DISCERN ONE OR MORE DRAWN CARDS.

Turn unperceived the bottom card of a pack face upwards; then let several of the company draw a card. Reverse the pack rapidly, so that the bottom is now the top card, and thus all the other cards are turned face upward, unseen by the spectators.

Hold the pack firmly in your fingers, and request those who have drawn to replace their cards in the pack. Thus all the drawn cards will lie with their faces downward, while the other cards will lie with their faces upward. You now step aside, select the drawn cards, and show them to the company.

TO TELL THROUGH A WINE-GLASS WHAT CARDS HAVE BEEN TURNED.

The picture cards have commonly a narrow stripe for the border. This border is usually narrower at one end of the card than it is at the other. You place the picture cards in such a manner that either all the broader or all the narrower borders are placed uppermost. You now request a spectator to turn one of the cards while you are absent from the room. On your return you examine all the cards through a wine-glass, and easily discover the one which has been turned, as its narrow border now lies on a level with the broader borders of the other cards. If they try to mystify you by turning none of the cards, you will easily see that this is the case.

THE WINDOW TRICK.

Place yourself in the recess of a window, and let any one stand close to you, as near to the window as possible. You now draw a card, hand it to him, and request him to note it. This you must contrive to do in such a manner, that you can catch a glimpse of the image of the card reflected in the window. You now know what the card is as well as he does, and can point it out to him after the cards have been thoroughly shuffled.

SCIENTIFIC RECREATIONS.

CHEMISTRY, optics, pneumatics, mechanics, and mathematics, all contribute their share towards furnishing recreation and sport for the social gathering or the family fireside. The magical combinations and effects of chemistry have furnished an almost infinite variety of pleasant experiments, which may be performed by our youthful friends with great success if a little care be taken; and the other branches of natural science are nearly as replete with interest.

The following *repertoire* of such tricks and illusions will be found exceedingly complete, although pains have been taken to select only the best and most startling of them. A large number are entirely new, but are described with sufficient clearness to enable any person of ordinary intelligence to become expert in them, with a little practice.

CHEMICAL AMUSEMENTS.

Chemistry is one of the most attractive sciences. From the beginning to the end, the student is surprised and delighted with the developments of the exact discrimination, as well as the power and capacity, which are displayed in various forms of chemical action. Dissolve two substances in the same fluid, and then, by evaporation or otherwise, cause them to reassume a solid form, and each particle will unite with its own kind, to the entire exclusion of all others. Thus, if sulphate of copper and carbonate of soda are dissolved in boiling water, and then the water is evaporated, each salt will be re-formed as before. This phenomenon is the result of one of the first principles of the science, and as such is passed over without

thought; but it is a wonderful phenomenon, and made of no account only by the fact that it is so common and so familiar.

It is by the action of this same principle, "chemical affinity," that we produce the curious experiments with

SYMPATHETIC INKS.

By means of these, we may carry on a correspondence which is beyond the discovery of all not in the secret. With one class of these inks, the writing becomes visible only when moistened with a particular solution. Thus, if we write to you with a solution of the sulphate of iron, the letters are invisible. On the receipt of our letter, you rub over the sheet a feather or sponge, wet with a solution of nut-galls, and the letters burst forth into sensible being at once, and are permanent.

2. If we write with a solution of sugar of lead, and you moisten with a sponge or pencil, dipped in water, impregnated with sulphuretted hydrogen, the letters will appear with metallic brilliancy.

3. If we write with a weak solution of sulphate of copper, and you apply ammonia, the letters assume a beautiful blue. When the ammonia evaporates, as it does on exposure to the sun or fire, the writing disappears, but may be revived again as before.

4. If you write with oil of vitriol very much diluted, so as to prevent its destroying the paper, the manuscript will be invisible except when held to the fire, when the letters will appear black.

5. Write with cobalt dissolved in diluted muriatic acid; the letters will be invisible when cold; but, when warmed, they will appear a bluish green.

We are almost sure that our secrets thus written will not be brought to the knowledge of a stranger because he does not know the solution which was used in writing, and, therefore, knows not what to apply to bring out the letters.

TO LIGHT A CANDLE WITHOUT TOUCHING THE WICK.

Let a candle burn until it has a good long snuff; then blow it out with a sudden puff, a bright wreath of white smoke will curl up from the hot wick. Now, if a flame be applied to this smoke, even at a distance of two or three inches from the candle, the flame will run down the smoke, and rekindle the wick in a very fantastic manner. To perform this experiment nicely, there must be no draught or "banging" doors while the mystic spell is rising.

MAGIC MILK.

Lime-water is quite transparent, and clear as common spring water; but if we breathe or blow into it, the bright liquid becomes opalescent and as

white as milk. The best way to try this simple experiment, is to put some powdered quicklime into a wine bottle full of cold water; shake them well together, now and then, for a day; then allow the bottle to remain quiet till the next day, when the clear lime-water may be poured off from the sediment. Now fill a wine-glass or tumbler with the lime-water thus made, and blow through the liquid with a glass tube, a piece of new tobacco-pipe, or a clean straw, and in the course of a minute or so—as the magicians say—"the water will be turned into milk." By means of this *pastime*, "Wise Men" can ascertain which young ladies are in love, and which young gentlemen are not. With a shrewd guess they present, as a test, a glass of lime-water to the one, and of pure water to the other, with unerring effect.

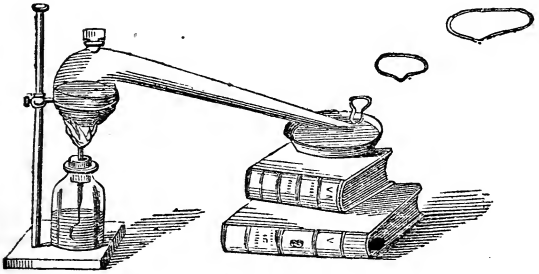
THE MIMIC VESUVIUS.

This experiment is a demonstration of the heat and light which are evolved during chemical combination. The substance phosphorus has a great affinity for oxygen gas, and wherever it can get it from it will, especially when aided by the application of heat. To perform this experiment, put half a drachm of solid phosphorus into a Florence oil-flask, holding the flask slantingly, that the phosphorus may not take fire and break the glass; pour upon it a gill and a half of water, and place the whole over a tea-kettle lamp, or any common lamp filled with spirits of wine; light the wick, which should be about half an inch from the flask; and as soon as the water is boiling hot, streams of fire, resembling sky-rockets, will burst at intervals from the water; some particles will also adhere to the sides of the glass, immediately display brilliant rays, and thus continue until the water begins to simmer, when a beautiful imitation of the aurora borealis will commence and gradually ascend until this collects into a pointed cone at the mouth of the flask; when this has continued for half a minute, blow out the flame of the lamp, and the apex of fire that was formed at the mouth of the flask will rush down, forming beautiful illumined clouds of fire, rolling over each other for some time; and when these disappear, a splendid hemisphere of stars will present itself. After waiting a minute or two, light the lamp again, and nearly the same phenomena will be displayed as at the beginning. Let a repetition of lighting and blowing out the lamp be made for three or four times, so that the number of stars may be increased; and after the third or fourth act of blowing out the lamp, the internal surface of the flask will be dry. Many of the stars will shoot with great splendor

from side to side, whilst others will appear and burst at the mouth of the flask. What liquid remains in the flask will serve for the same experiment three or four times, without adding any water. Care should be taken, after the operation is over, to put the flask in a cool and secure place.

THE REAL WILL-O'-THE-WISP.

Into a small retort place about an ounce of strong liquor of potash; that is, pure potash dissolved in water, together with about a drachm of phosphorus. Let the neck or beak of the retort dip into a saucer of water, say half an inch deep; now very gently heat the liquid in the retort with a spirit-lamp until it boils. In a few minutes the retort will be filled with a white cloud; then the gas generated will begin to bubble at the end of the saucer; a minute more, each bubble, as it issues from the boiling fluid, will *spontaneously take fire* as it comes into the air, forming at the same time the



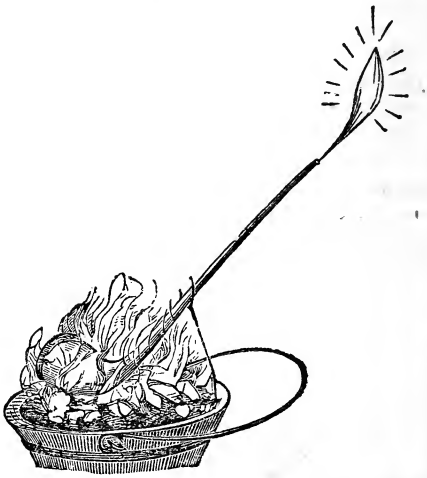
philosopher's ring of phosphoric acid. Care is required in handling phosphorus; but our young chemical readers will, we think, not forego this wonderful experiment for the want of due attention; for, without proper care on their part, we must give up showing them wonders even greater than these.

THE PAPER ORACLE.

Some amusement may be obtained among young people by writing, with common ink, a variety of questions, on different bits of paper, and adding a pertinent reply to each, written with nitro-muriate of gold. The collection should be suffered to dry, and put aside, until an opportunity offers for using them. When produced, the answers will be invisible; desire different persons to select such questions as they may fancy, and take them home with them; then promise, that if they are placed near the fire during the night, answers will appear written beneath the questions in the morning; and such will be the fact, if the paper be put in any dry, warm situation.

THE MIMIC GAS-HOUSE.

The next illustration shows a simple way of making illuminating gas, by means of a tobacco-pipe. Bituminous coal contains a number of chemical compounds, nearly all of which can, by distillation, be converted into an illuminating gas; and with this gas nearly all our cities are now lighted in the dark hours of night. To make it as represented in our engraving, obtain some coal-dust (or walnut or butternut meats will answer), and fill the bowl of a pipe with it; then cement the top over with some clay; place the bowl in the fire, and soon smoke will be seen issuing from the end of the stem; when that has ceased coming, apply a light, and it will burn brilliantly for several minutes; after it has ceased, take the pipe from the fire and let it cool, then remove the clay, and a piece of coke will be found inside; this is the excess of carbon over the hydrogen contained in the coal, for all the hydrogen will combine with carbon at a high temperature, and make what are called hydro-carbons—a series of substances containing both these elemental forms of matter.



THE SILVER TREE.

Put into a decanter four drachms of nitrate of silver, and fill up the decanter with distilled or rain water; then drop in about an ounce of mercury, and place the vessel where it may not be disturbed; in a short time the silver will be precipitated in the most beautiful arborescent form, resembling real vegetation.

The above experiment shows the precipitation of one metal by another, owing to the affinity that exists between them. The metal in solution, having a greater affinity for the pure metal suspended in it, precipitates itself from the solution, and becomes firmly attached thereto. The silver tree, produced as above described, is frequently called Arbor Dianæ, or the Tree of Diana.

ALUM BASKETS.

Make a small basket, about the size of the hand, of iron wire, or split willow; then take some lamp-cotton, untwist it, and wind it round every portion of the basket. Then mix alum, in the proportion of one pound with a quart of water, and boil it until the alum is dissolved. Pour the solution into a deep pan, and in the liquor suspend the basket, so that no part of it touch the vessel, or be exposed to the air. Let the whole remain perfectly at rest for twenty-four hours; when, if you take out the basket, the alum will be found prettily crystallized over all the limbs of the cottoned frame.

In like manner, a cinder, a piece of coke, the sprig of a plant, or any other object, suspended in the solution by a thread, will become covered with beautiful crystals.

If powdered turmeric be added to the hot solution, the crystals will be of a bright yellow; if litmus be used instead, they will be of a bright red; logwood will yield them of a purple, and common writing-ink, of a black tint; or, if sulphate of copper be used instead of alum, the crystals will be of fine blue.

But the colored alum-crystals are much more brittle than those of pure alum, and the colors fly; the best way of preserving them is to place them under a glass shade, with a saucer containing water; this keeps the atmosphere constantly saturated with moisture, the crystals never become too dry, and their texture and color undergo but little change.

THE MAGIC BOTTLE.

This trick, if well managed, is one of the most wonderful that can be performed in a drawing-room without apparatus; but it requires dexterity at the conclusion.

The person performing the trick offers to pour from a common wine-bottle, port-wine, sherry, milk, and champagne, in succession, and in any order.

To accomplish the trick, you must make solution, of the following chemicals, and label the bottles with numbers, thus:

No. 1. A mixture of two parts perchloride of iron, and one part sulphuric acid (vitriol).

No. 2. A strong solution of the sulphocyanate of potash.

No. 3. A strong solution of acetate of lead.

No. 4. A solution of bicarbonate of soda, or potash.

No. 5. A clear solution of gum arabic.

Procure a champagne-bottle, and wash it out well; then pour three teaspoonfuls of No. 1 into it. As the quantity is very small, it will not be observed, especially if you are quick in your movements. Pour some distilled or rain water into a common water-bottle, or jug, and add a tablespoonful of No. 5 to it; then set it aside, ready for use.

Provide some wine-glasses, of four different patterns, and into one pattern put one drop of solution No. 2; into another, three drops of solution No. 2; rinse the third with solution No. 3, and the fourth with solution No. 4.

Arrange the glasses on a small tray, remembering the solutions that were poured into each pattern.

Every thing being ready, take the champagne-bottle that you have prepared, from two or three others, and, holding it up, to show the company that it is clear and empty, you must desire some person to hand you the water-bottle, or jug, and then fill up the bottle with the water.

Pour some of the contents of the bottle into an unprepared glass, in order to show that it is water; then say, "Change to champagne," and pour the liquid from the bottle into one of the glasses rinsed with No. 4; then pour into the glass containing *three drops* of No. 2, and it will change to port wine; but if poured into the glass rinsed with No. 3, it will change to milk; and if into the glass with one drop of No. 2, it will produce sherry.

Be careful, in pouring the fluid from the bottle, not to hold it high above the glasses, but to keep the mouth of it close to the edges, otherwise persons will observe that it undergoes change of color after it is poured into them; and, on this account, the glasses should be held rather high.

As all the solutions used in the above trick are deleterious, they must not be left about in the way of children, and, of course, the fluid in the wine-glasses must not even be tasted; but, if any of the company wish to drink the wines you have made, then the tray must be adroitly exchanged for another, with the proper wines placed on it.

THE FADED ROSE RESTORED.

Take a rose that is quite faded, and throw some sulphur on a chafing-dish of hot coals; then hold the rose over the fumes of the sulphur, and it will become quite white; in this state dip it into water, put it into a box, or drawer, for three or four hours, and when taken out it will be quite red again.

THE PROTEAN LIQUID.

A red liquor, which, when poured into different glasses, will become yellow, blue, black, and violet, may be thus made: Infuse a few shavings of logwood in common water, and when the liquor is red, pour it into a bottle; then take three drinking-glasses, rinse one of them with strong vinegar, throw into the second a small quantity of pounded alum, which will not be observed if the glass has been newly washed, and leave the third without any preparation. If the red liquor in the bottle be poured into the first glass, it will assume a straw-color; if into the second, it will pass gradually from bluish-gray to black, provided it be stirred with a bit of iron, which has been privately immersed in good vinegar; in the third glass the red liquor will assume a violet tint.

THE CHANGEABLE RIBBON.

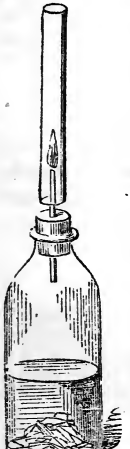
Dip a rose-colored ribbon into nitric acid, diluted with eight or ten parts of water, and as soon as the color disappears, which it will do in a short time, take out the ribbon, and put it into a very weak alkaline solution; when the alkali will quickly neutralize the acid, and the color will reappear.

THE CHEMICAL CHAMELEON.

Put a drachm of powdered nitrate of cobalt into a phial, containing an ounce of the solution of caustic potass, when the decomposition of the salt, and precipitation of a blue oxide of cobalt will take place. Cork the phial and the liquid will assume a blue color, from which it will pass to a lilac, afterward to a peach tint, and, finally, to a light red.

MUSICAL FLAME.

Fit a good cork into a wine-bottle; burn a hole through the cork with a round iron skewer, and into it fix a piece of tobacco-pipe about eight inches long. Put into the bottle about two or three ounces of zinc, in slips, such as the waste cuttings from a zinc-worker; now pour water on to the zinc until the bottle is rather more than half full; then add about three parts of a wineglassful of sulphuric acid (oil of vitriol); this causes a rapid effervescence at first, but which subsides to a moderate and continuous boiling for a lengthened period; as soon as the boiling is regular, the cork with the pipe through it may be inserted into the bottle. If a light be placed to the end of the pipe, a flame will be produced, which will continue to burn so long as there is any visible action in the bottle. This flame is the ignited hydrogen gas (water-gas) resulting from the decomposition of water by the acid and zinc, and as such is an exceedingly interesting experiment. Now, to be musical, procure a glass or metal pipe, about sixteen or eighteen inches long, and from half to three-quarters of an inch in diameter; place the tube over the flame, and allow the pipe to be about three to five inches up the tube, which will act as a kind of high chimney: it must be held perfectly steady and upright, at a particular distance up the tube, which varies according to the size of the flame. A beautiful sound is thus produced, similar to an organ-pipe. This sound, or "musical flame," varies in note according to the diameter of the tube, being deeper or more bass as the tube is increased in size. By using various-sized tubes, different sounds are thus readily produced. The true explanation of this singular experiment remains yet to be solved.

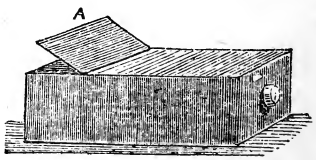


OPTICAL AMUSEMENTS.

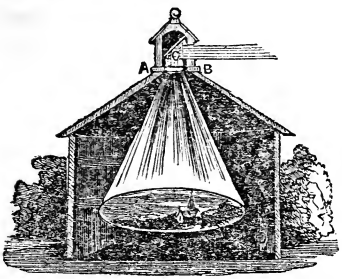
THE science of optics affords an infinite variety of amusements, which cannot fail to instruct the mind, as well as delight the eye. By the aid of optical instruments, we are enabled to lessen the distance to our visual organs between the globe we inhabit and "the wonders of the heavens above us;" to watch "the stars in their courses," and survey at leisure the magnificence of "comets importing change of times and states;" to observe the exquisite finish and propriety of construction which are to be found in the most minute productions of the earth;—to trace the path of the planet, in its course round the magnificent orb of day, and to detect the pulsation of the blood, as it flows through the veins of an insect. These are but a few of the powers which this science offers to man; to enumerate them all would require a space equal to the body of our work: neither do we propose to notice, in the following pages, the various instruments and experiments which are devoted to purposes merely scientific; it being our desire only to call the attention of our juvenile readers to such things as combine a vast deal of amusement with much instruction; to inform them as to the construction of the various popular instruments; to show the manner of using them, and to explain some of the most attractive experiments which the science affords. By doing thus much, we hope to offer a sufficient inducement to extend inquiry much further than the information which a work of this nature will enable us to afford.

THE CAMERA OBSCURA.

This is a very pleasing and instructive optical apparatus, and may be purchased for a small sum. But it may be easily made by the young optician. Procure an oblong box, about two feet long, twelve inches wide, and eight high. In one end of this a tube must be fitted containing a lens, and be made to slide backward and forward, so as to suit the focus. Within the box should be a plane mirror, reclining backwards from the tube at an angle of forty-five degrees. At the top of the box is a square of unpolished glass, upon which from beneath the picture will be thrown, and may be seen by raising the lid A. To use the camera, place the tube with the lens on it opposite to the object, and having adjusted the focus, the image will be thrown upon the ground glass, as above stated, where it may be easily copied by a pencil or in colors.

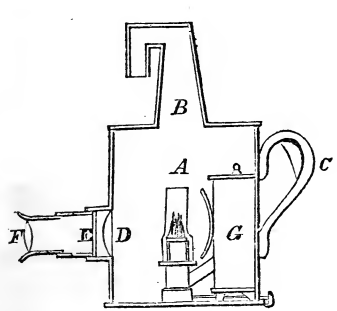


The form of a camera obscura, used in a public exhibition, is as follows: D D is a large wooden box, stained black in the inside, and capable of containing from one to eight persons. A B is a sliding piece, having a sloping mirror, C, and a double convex lens, which may, with the mirror C, be slid up or down, so as to accommodate the lens to near or distant objects. When the rays proceeding from an object without fall upon the mirror, they are reflected upon the lens F, and brought to fall on the bottom of the box, or upon a table placed horizontally to receive them, which may be seen by the spectator whose eye is at D.



THE MAGIC LANTERN.

The object of this ingenious instrument is to represent, in a dark room, on a white wall or cloth, a succession of enlarged figures of remarkable, natural, or grotesque objects. The figure given below is a representation of one. It consists of a tin box, with a funnel on the top, represented by *B*, and a door on one side of it. This funnel, by being bent, as shown in the figure, serves the double purpose of letting out the smoke and keeping in the light. In the middle of the bottom of the box is placed a movable tin lamp, *A*, which must have two or three good lights, at the height of the centre of the polished tin reflector, *G*. In the front of the box, opposite the reflector, is fixed a tin tube, in which there slides another tube. The sliding tube has, at its outer extremity, a convex lens *F*, of about two inches diameter: the stationary tube also has a convex lens, *D*, fixed in it, of three inches in diameter. The focus of the smaller of these lenses may be about five inches. Between the stationary tube and the lamp, there must be a slit or opening (as at *E*), to admit of the passage of glass sliders, mounted in paper or wooden frames, such as are represented on the next page; upon which sliders it is that the miniature figures are painted, which are intended to be shown upon the wall. The distinctness of the enlarged figures depends not only upon the goodness of the magnifying glass, but upon the clearness of the light yielded by the lamp *A*. It may be purchased ready made of any optician.

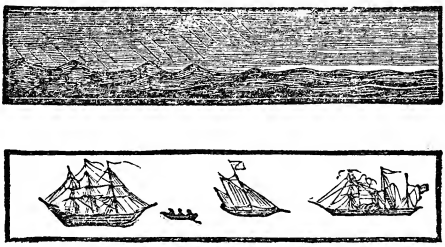


To paint the glasses.—The slides containing the objects usually shown in a magic lantern, are to be bought of opticians with the lantern, and can be procured cheaper and better in this way, than by any attempt at manufacturing them. Should, however, the young optician wish to make a few slides, of objects of particular interest to himself, he may proceed as follows: Draw on a paper the subject you desire to paint. Lay it on a table or any flat surface, and place the glass over it; then draw the outlines, with a very fine pencil, in varnish mixed with black paint, and, when dry, fill up the other parts in their proper colors. Transparent colors must be used for this purpose, such as carmine, lake, Prussian blue, verdigris, sulphate of iron, tincture of Brazil wood, gamboge, &c.; and these must be tempered with a strong white varnish, to prevent their peeling off. Then shade them with black, or with bistre, mixed with the same varnish.

To exhibit the Magic Lantern.—The room for the exhibition ought to be large, and of an oblong shape. At one end of it suspend a large sheet, so as to cover the whole of the wall. The company being all seated, darken the room, and placing the lantern with its tube in the direction of the sheet, introduce one of the slides into the slit, taking care to invert the figures; then adjust the focus of the glasses in the tube, by drawing it in or out, as required, and a perfect representation of the object will appear.

Effects of the Magic Lantern.—Most extraordinary effects may be produced by means of the magic lantern; one of the most effective of which is a tempest at sea.

This is effected by having two slides painted, one with the tempest as approaching on one side, and continuing in intensity till it reaches the



other. Another slide has ships painted on it, and while the lantern is in use, that containing the ships is dexterously drawn before the other, and represents *ships in the storm.*

The effects of sunrise, moonlight, starlight, &c., may be imitated also, by means of double sliders; and figures may be introduced sometimes of fearful proportions.

Heads may be made to nod, faces to laugh; eyes may be made to roll, teeth to gnash; crocodiles may be made to swallow tigers; combats may be represented; but one of the most instructive uses of the slides is to

make them illustrative of astronomy, and to show the rotation of the seasons, the cause of eclipses, the mountains in the moon, spots on the sun, and the various motions of the planetary bodies and their satellites.

THE PHANTASMAGORIA.

Between the phantasmagoria and the magic lantern there is this difference: in common magic lanterns the figures are painted on transparent glass, consequently the image on the screen is a circle of light, having figures upon it; but in the phantasmagoria all the glass is made opaque, except the figures, which being painted in transparent colors, the light shines through them, and no light can come upon the screen except that which passes through the figure, as is here represented.

There is no sheet to receive the picture, but the representation is thrown on a thin screen of silk or muslin, placed between *the spectators and the lantern.* The images are made to appear approaching and receding, by removing the lantern farther from the screen, or bringing it nearer to it. This is a great advantage over the arrangements of the magic lantern, and by it the most astonishing effects are often produced.

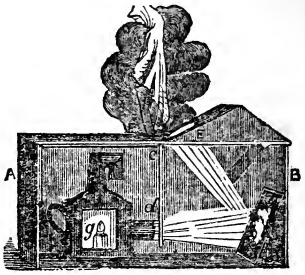
DISSOLVING VIEWS.

The dissolving views, by which one landscape or scene appears to pass into the other while the scene is changing, are produced by using two magic lanterns, placed side by side, and that can be a little inclined towards each other when necessary, so as to mix the rays of light, proceeding from the lenses of each, together, which produces that confusion of images, in which one view melts, as it were, into the other, which gradually becomes clear and distinct.

HOW TO RAISE A GHOST.

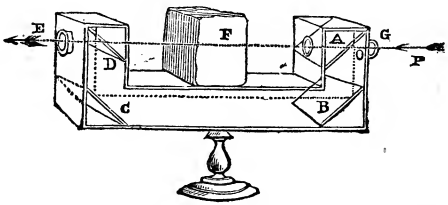
The magic lantern or phantasmagoria may be used in a number of marvellous ways, but in none more striking than in raising an apparent spectre. Let an open box, A B, about three feet long, a foot and a half broad, and two feet high, be prepared. At one end of this place a small swing dressing-glass, and at the other let a magic lantern be fixed, with its lenses in a direction towards the glass. A glass should now be made to slide up and down in the groove C *d*, to which a cord and pulley should be attached, the end of the cord coming to the part of the box marked A. On this glass the most hideous spectre that can be imagined may be painted, but in a

squat or contracted position, and when all is done, the lid of the box must be prepared, by raising a kind of gable at the end of the box B, and in its lower part at E, an oval hole should be cut sufficiently large to suffer the rays reflected from the glass to pass through them. On the top of the box F, place a chafing-dish, upon which put some burning charcoal. Now light the lamp *g* in the lantern, sprinkle some powdered camphor or white incense on the charcoal, adjust the slide on which the spectre is painted, and the image will be thrown upon the smoke. In performing this feat the room must be darkened, and the box should be placed on a high table, that the hole through which the light comes may not be noticed.



HOW TO SEE THROUGH A PHILADELPHIA BRICK.

Construct a hollow box or case, like the figure in the margin. One side is purposely removed in the engraving, to enable you to see the arrangement of the interior. A, B, C, and D are four small pieces of looking-glass, all placed at an angle of 45°, with respect to those sides of the box on which they are fixed; at E and G two flat pieces of glass are inserted, as in the eye-glass of a telescope. Supposing you look through the opening E, in the direction of an object placed at O, you would see it in the same manner as if there was an uninterrupted view between E and G, which is evidently



not the case. The cause of this is readily explained. The image of the object at O is received on the looking-glass A, by which it is reflected to B, as it is again from B to C, and afterwards to D; and this last image in D is seen by the eye of the spectator placed at E, in the same direction as if in reality he was looking at the real object itself, in the direction of the dotted line from O to E. From this it is evident that the placing an opaque body at F cannot prevent the object at O being seen. Of course all this arrangement of the instrument is concealed, and you place it in the hands of a companion, that he may look through E or G, it matters not which, at any object

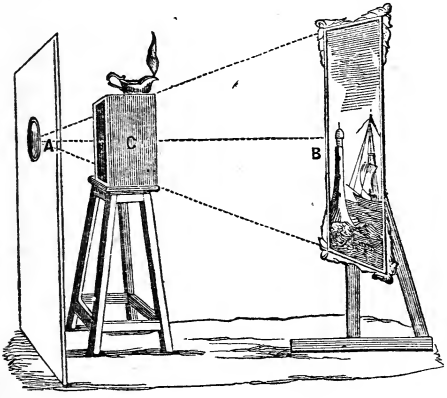
placed beyond. You may then safely lay a wager that your instrument is of so magical a nature that it will enable you to see through a brick wall; but as a single brick will be more convenient, and equally wonderful, you are willing to satisfy his doubts at once. Of course the hand or the hat, or any other opaque object, will answer the same purpose.

THE COSMORAMA.

The cosmorama is very simple in construction, and may be formed at very little trouble and expense, while it may be varied to infinity.

It consists merely of a picture seen through a magnifying-glass, exactly in the same manner as in the common shows exhibited in the streets; the difference not being in the construction of the apparatus, but in the quality of the pictures exhibited. For the common shows, coarsely-colored prints are sufficiently good; in the cosmorama, a moderately good oil painting is employed. The contrivance will be readily understood by the following illustration:—

In the hole of a door or partition insert a doubly-convex lens, A, having about three feet focus. At rather less than the focal distance of the lens from it, place, in a vertical position, the picture B, to be represented. The optical part of the exhibition is now complete; but, as the frame of the picture would be seen, and thus the illusion be destroyed, it is necessary to place between the lens and the view a square wooden frame, formed of four short boards. The frame, which is to be painted black, prevents the rays of light passing beyond a certain line, according to its distance from the eye; the width of it being such, that upon looking through the lens, the picture is seen as if through an opening, which adds very much to the effect; and, if that end of the box, or frame, next the picture have an edge to it, representing the outlet of a cave, a Gothic ruin, or a rocky archway, which might be partially lighted by the top of the box being semi-transparent, the beauty and apparent reality of the picture would be very much enhanced.



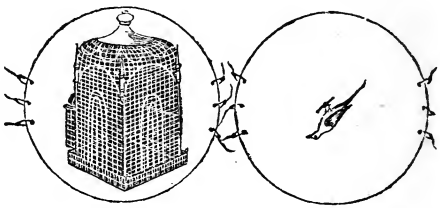
Upon the top of the frame is represented a lamp to illuminate the picture; while all extraneous light is carefully excluded, by the lamp being contained in a box, open in the front and at the top.

TO IMITATE A MIRAGE.

Provide a glass tumbler two-thirds full of water, and pour spirit of wine upon it; or pour into a tumbler some sirup, and fill it up with water; when mixed, the object seen through it will be inverted.

THE THAUMATROPE.

Cut out a piece of cardboard of circular form, and affix to it six pieces of string, three on each side. Paint on one side of the card a bird and on the other a cage, taking care to paint the bird upside down, or the desired effect will not be produced. When showing the toy, take hold of the centre strings between the forefinger and thumb, and twirl the card rapidly round, and the bird will appear snugly ensconced in its cage. The principle on which this effect is produced is, that the image of any object received on the retina or optic nerve is retained on the mind about eight seconds after the object causing the impression is withdrawn, being the memory of the object; consequently the impression of the painting on one side of the card is not obliterated ere the painting on the other side is brought before the eye. It is easy to understand from this fact how both are seen at once. Many objects will suit the thaumatrope, such as a juggler throwing up two balls on one side, and two balls on the other; and according to the pairs of strings employed, he will appear to throw up two, three, or four balls; the body and legs of a man on one side, and the arms and head on another; a horse and his rider; a mouse and trap. But we leave it to the ingenuity of our readers to devise for themselves.



TWO-FOLD REFLECTION.

Provide a circular piece of glass, and with a common awl, moistened with spirit of turpentine, pierce the centre of the glass; hold it encircled with the fingers and thumb in the sunshine, or the strong light of a lamp, when these striking effects will be produced. If the glass be *red*, the hole pierced in the middle will be reflected *green;* if the glass be *green*, the spot will be *red;* if *blue*, *orange;* and if *yellow*, *indigo*.

PNEUMATIC AMUSEMENTS.

THE branch of the physical sciences which relates to the air and its various phenomena is called Pneumatics. By it we learn many curious particulars. By it we find that the air has weight and pressure, color, density, elasticity, compressibility, and some other properties with which we shall endeavor to make the young reader acquainted by many pleasing experiments, earnestly impressing upon him to lose no opportunity of making physical science his study.

To show that the air has weight and pressure, the common leather sucker by which boys raise stones will show the pressure of the atmosphere. It consists of a piece of soft but firm leather, having a piece of string drawn through its centre. The leather is made quite wet and pliable, and then its under part is placed on the stone and stamped down by the foot. This pressing of the leather excludes the air from between the leather and the stone, and by pulling the string a vacuum is left underneath its centre; consequently the weight of the air about the edges of the leather, not being counterbalanced by any air between it and the stone, enables the boy to lift it.

THE MAGIC TUMBLER.

The air which for about forty miles surrounds our earth has a definite weight; and although we can neither see nor feel it, we are conscious of its presence by the momentary operation of breathing. The weight of a column of air one inch square, and forty miles high, is about fifteen pounds. The reason why we are not crushed down by this enormous weight is, because we are surrounded on all sides by it, and as the pressure or weight is equal all around, it becomes, as far as we are personally concerned, insensible.

That the air *does* exert a definite pressure, in consequence of its weight, may be easily proved by any one with the above simple apparatus—only a tumbler and a sheet of paper. Fill a tumbler quite full of water, and carefully draw over its top a sheet of clean letter paper, and be careful to see that there are no bubbles of air in the water; place your hand over the paper while inverting it, and when the glass is mouth downward the water will be kept in, until

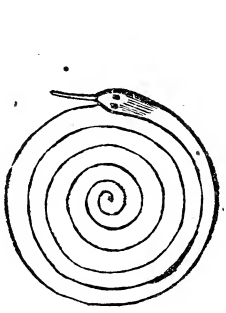
the paper becomes wet through. The air pressing against the mouth of the tumbler is of greater weight than the contained water, and so, until some air can get in to supply the place of the water, it cannot fall out.

THE WEIGHT OF THE AIR PROVED BY A PAIR OF BELLOWS.

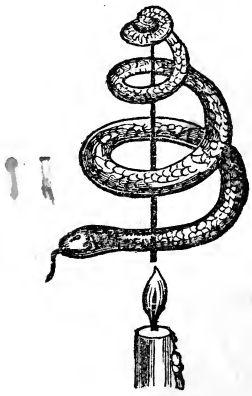
Shut the nozzle and valve-hole of a pair of bellows, and after having squeezed the air out of them, if they are perfectly air-tight, we shall find that a very great force, even some hundreds of pounds, is necessary for separating the boards. They are kept together by the weight of the heavy air which surrounds them, in the same manner as if they were surrounded by water.

THE REVOLVING SERPENT.

This illustration represents an amusing and instructive experiment, which proves the ascension of heated air by rendering its effects visible, and it may also be used to test the direction of the currents in our rooms and dwellings. To construct one, a piece of board is taken and cut in the form



A

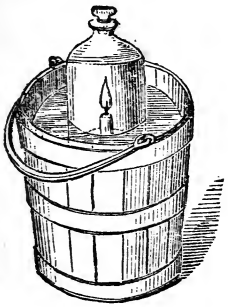


B

of a spiral as at A, and to give effect it may be painted to represent a serpent. Then prepare a stand as at B, having a needle in its upper end, and suspend the serpent from its centre on the needle, when it will assume the position shown at B. If this be now placed over a stove, or the tail of the serpent suspended by a bit of thread over a lamp, the heated air ascending through it will cause it to revolve in a very amusing manner. Two serpents may be made to turn in opposite directions, by pulling one out from the one side, and the other in the reverse direction, so that their heads may point toward each other when suspended.

TO PUT A LIGHTED CANDLE UNDER WATER.

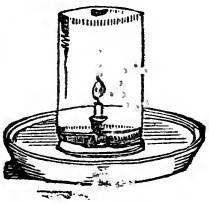
Procure a good-sized cork, or bung; upon this place a small lighted taper; then set it afloat in a pail of water. Now, with a steady hand, invert a large drinking-glass over the light, and push it carefully down into the water. The glass being full of air, prevents the water entering it. You may thus see the candle burn *under* water, and bring it up again to the surface, still alight. This experiment, simple as it is, serves to elucidate that useful contrivance called the diving-bell, being performed on the same principle.



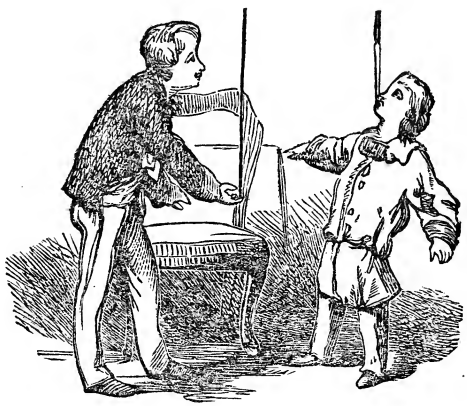
The largest drinking-glass holds but half a pint, so that your diving-light soon goes out for the want of air. As an average, a burning candle consumes as much air as a man, and he requires nearly a gallon of air every minute, so that, according to the size of the glass over the flame, you can calculate how many seconds it will remain alight; of course, a large flame requires more air than a small one. For this, and several other experiments, a quart bell-glass is very useful, but, being expensive, it is not found in every parlor laboratory; one is, however, easily made from a green glass pickle-bottle; get a glazier to cut off the bottom, and you have a bell-glass that Chilton would not reject.

TO PLACE WATER IN A DRINKING-GLASS UPSIDE DOWN.

Procure a plate, a tumbler, and a small piece of tissue or silver paper. Set the plate on a table, and pour water in it up to the first rim. Now very slightly crumple up the paper, and place it in the glass; then set it on fire. When it is burnt out, or rather just as the last flame disappears, turn the glass quickly upside down into the water. Astonishing! the water rushes with great violence into the glass! Now you are satisfied that water can be placed in a drinking-glass upside down. Hold the glass firm, and the plate also. You can now reverse the position of the plate and glass, and thus convince the most sceptical of the truth of your pneumatic experiment. Instead of burning paper, a little brandy or spirits of wine can be ignited in the glass; the result of its combustion being invisible, the experiment is cleaner.



AMUSEMENTS IN MECHANICS.



THERE is no subject of such importance as mechanics, as its principles are founded upon the properties of matter and the laws of motion; and, in knowing something of these, the tyro will lay the foundation of all substantial knowledge.

The properties of matter are the following: Solidity (or impenetrability), divisibility, mobility, elasticity, brittleness, malleability, ductility, and tenacity.

The laws of motion are as follow:

1. Every body continues in a state of rest, or of uniform rectilineal motion, unless affected by some extraneous force.

2. The change of motion is always proportionate to the impelling force.

Action and reaction are always equal and contrary.

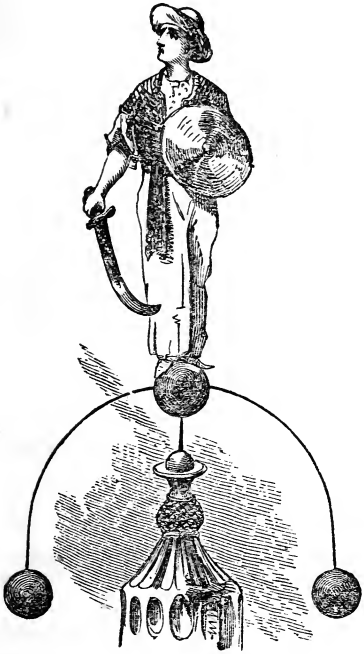
EXPERIMENT OF THE LAW OF MOTION.

In shooting at "taw," if the marble be struck "plump," as it is called, it moves forward exactly in the same line of direction; but, if struck sideways, it will move in an oblique direction, and its course will be in a line situated between the direction of its former motion and that of the force impressed. This is called the resolution of forces.

BALANCING.

The centre of gravity in a body is that part about which all the other parts equally balance each other. In balancing a stick upon the finger, or upon the chin, it is necessary only to keep the chin or finger exactly under the point which is called the centre of gravity.

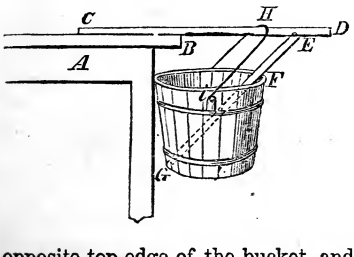
THE BALANCED TURK.



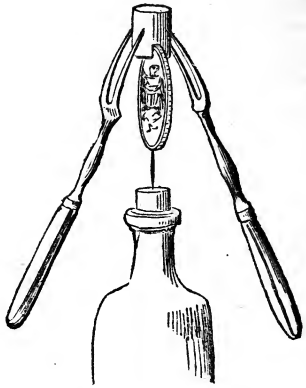
A decanter, or bottle, is first obtained, and in its cork is placed a needle; on this is balanced a ball of wood, having a cork or wooden figure cut out, standing on the top. From the ball project two wires, bent semicircularly, having at their extremities two bullets. Push the bullets, and the whole will turn round on the needle, the figure standing upright all the while; and twist it about from side to side as much as you like, it will always regain its erect position. The two bullets, in this case, cause the centre of gravity to fall below the ball on which the figure is placed, and, in consequence, as the centre of gravity always assumes the lowest position, it cannot do so without making the figure stand erect, or, in other words, until the bullets themselves are equally balanced. Any boy may whittle one of these toys out with a jack-knife.

THE BALANCED PAIL.

To support a pail of water by a stick, only half of which, or less, rests upon the table. Let A B be the top of the table, and C D the stick which is to support the bucket. Place the handle of the bucket on the stick in such a manner that it may rest on it in an inclined position, as H *i*, and let the middle of the bucket be a little within the edge of the table; to keep this apparatus properly in its situation, place another stick, E F G, with the end resting against the bucket at the bottom, its middle, F, resting on the opposite top edge of the bucket, and its other extremity, E, against the first stick, C D, in which a notch must be cut to retain it. The bucket will thus be kept in its situation, without inclining to either side, and, if not already filled with water, it may be filled with safety.



THE BALANCED COIN.



This engraving represents what seems to be an astounding statement, namely, that a quarter, or other piece of money, can be made to spin on the point of a needle. To perform this experiment, procure a bottle, cork it, and in the cork place a needle. Now take another cork, and cut a slit in it, so that the edge of the coin will fit into the slit; next place two forks in the cork, as seen in the engraving, and, placing the edge of the coin on the needle, it will spin round without falling off. The reason is this: that the weight of the forks, projecting as they do so much below the coin. brings the centre of gravity of the arrangement much below the point of suspension, or the point of the needle, and therefore the coin remains perfectly safe and upright.

THE SPANISH DANCER.

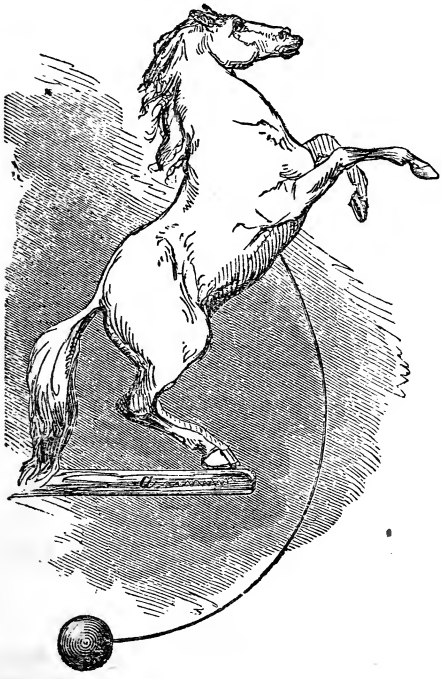
The laws which govern the motion of bodies are capable of many pleasing illustrations, and the example which we now give of causing rotary motion is very interesting and easily performed.

Take a piece of card, and cut out a little figure like that in the engraving, and paste or gum it in an erect position on the inside of a watch-glass, *A*. Then procure a black japanned waiter, *B*, or a clean plate will do, and, holding it in an inclined position, place the figure and watch-glass on it, and they will, of course, slide down. Next let fall a drop of water on the waiter, place the watch-glass on it, and again incline the waiter, and instead of the watch-glass sliding down, it will begin to revolve. It will continue to revolve with increasing velocity, obeying the inclination and position of the plane, as directed by the hand of the experimentalist. The reason of this is, in the first place, in consequence of the cohesion of the water to the two surfaces, a new force is introduced, by which an unequal degree of resistance is imparted to different parts of the

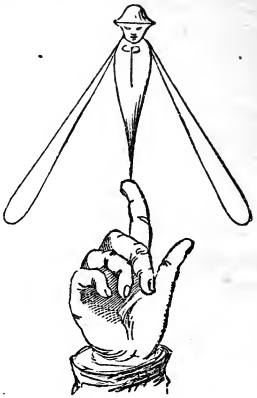
watch-glass in contact with the waiter, and, consequently, in its effort to slide down, it revolves. Again, if the drop of water be observed, it will be seen that it undergoes a change of figure; a film of water, by capillary action, is drawn to the foremost portion of the glass, while, by the centrifugal force, a body of water is thrown under the hinder part of it. The effect of both of these actions is to accelerate the motion, or, in other words, to gradually increase the speed.

THE MECHANICAL BUCEPHALUS.

The illustration of the horse furnishes a very good solution of a popular paradox in mechanics: Given, a body having a tendency to fall by its own weight; required, how to prevent it from falling by adding to it a weight on the same side on which it tends to fall. The engraving shows a horse, the centre of gravity of which is somewhere about the middle of its body. It is evident, therefore, that were it placed on its hinder legs, on a table, *a*, the line of its *direction*, or centre, would fall considerably beyond its base, and the horse would fall on the ground; but, to prevent this, there is a stiff wire attached to a weight, or bullet, connected with the body of the horse, and by this means the horse prances on a table, without falling off; so that the figure which was incapable of supporting itself is actually prevented from falling by adding a weight to its unsupported end. This seems almost impossible; but, when we consider that, in order to have the desired effect, the wire must be bent, and the weight be farther under the table than the horse's feet are on it, the mystery is solved, as it brings the total weight of bullet and horse in such a position that the tendency is rather to make it stand up than to let it fall down.



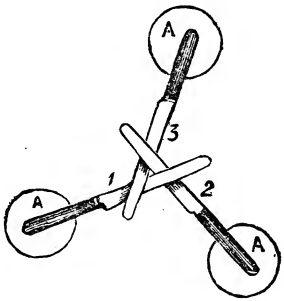
THE REVOLVING IMAGE.



This little figure may be made to balance itself amusingly. Get a piece of wood, about two inches long; cut one end of it into the form of a man's head and shoulders, and let the other end taper off to a fine point. Next furnish the little gentleman with a pair of wafters, shaped like oars, instead of arms; but they must be more than double the length of his body; stick them in his shoulders, and he is complete. When you place him on the tip of your finger, if you have taken care to make the point exactly in the centre, he will stand upright, as seen in the engraving. By blowing on the wafters, he may be made to turn round very quickly. It is explained by the reasons that were given in the experiment of the "balanced coin."

THE BRIDGE OF KNIVES.

Place three glasses, A A A, in the form of a triangle, and arrange three knives upon them, as shown in the figure, the blade of No. 1 over that of



No. 2, and that over No. 3, which rests on No. 1. The bridge so made will be self-supported.

THE PARLOR BOOMERANG.

The boomerang is a weapon used by the savages of Australia. By them it is made of a flat piece of hard wood. The peculiarity of this instrument is, that in whatever direction it is thrown, it will return to the place from whence it started in a curve. The Australian aborigines use it with great dexterity, making it travel round a house and return to their feet, or they can throw it on the ground so that it will fly into the air, form a perfect arc over

Fig. 1.

their heads, and strike them on the back. This curious instrument can be made in miniature, and is a very amusing toy for the parlor.

Get a piece of tolerably stiff card-board, and cut from it a figure resembling Fig. 1, and you will have a boomerang.

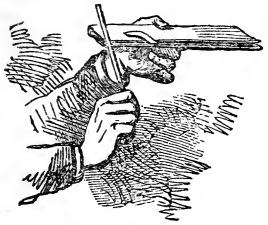


Fig. 2.

The next thing is to propel it through the air so that it will return to your feet; to do this, lay the boomerang on a flat book, allowing one end to project about an inch; then, holding the book at a slight angle, strike the projecting end of the boomerang with a piece of stick, or heavy penholder, as represented in Fig. 2, when it will fly across the room and return to your feet.

THE COMPLACENT VIZIER.

Among the novelties which scientific investigation has added to our toys, are several figures which will raise themselves upright when thrown down, and regain the erect position, notwithstanding their equilibrium is disturbed. The figures themselves are made of the pith of elder-trees, or any other very light substance. Each is placed on half a bullet, as at Fig. 1, or may be made to stand on its head, as at Fig. 2, by making its cap of lead. Their appearance is very droll when they are moved about, as they seem every moment to be falling over, and yet continually right themselves. The philosophy of this is, that the centre of gravity being in the base, and always trying to assume the lowest position, it keeps the figures upright. However much the equilibrium is disturbed, it will always try to regain its original position.

Fig. 1.

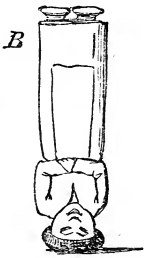


Fig. 2.

ARITHMETICAL AMUSEMENTS.

As the principal object of this volume is to enable the young reader to learn something in his sports, and to understand what he is doing, we shall, before proceeding to the curious tricks and feats connected with the science of numbers, present him with some arithmetical aphorisms, upon which most of the following examples are founded.

APHORISMS OF NUMBER.

1. If two even numbers be added together, or subtracted from each other, their sum or difference will be an even number.

2. If two uneven numbers be added or subtracted, their sum or difference will be an even number.

3 The sum or difference of an even and an uneven number added or subtracted will be an uneven number.

4. The product of two even numbers will be an even number, and the product of two uneven numbers will be an uneven number.

5. The product of an even and uneven number will be an even number.

6. If two different numbers be divisible by any one number, their sum and their difference will also be divisible by that number.

7. If several different numbers, divisible by 3, be added or multiplied together, their sum and their product will also be divisible by 3.

8. If two numbers divisible by 9 be added together, the sum of the figures in the amount will be either 9 or a number divisible by 9.

9. If any number be multiplied by 9, or by any other number divisible by 9, the amount of the figures of the product will be either 9 or a number divisible by 9.

10. In every arithmetical progression, if the first and last term be each multiplied by the number of terms, and the sum of the two products be divided by 2, the quotient will be the sum of the series.

11. In every geometric progression, if any two terms be multiplied together, their product will be equal to that term which answers to the sum of these two indices. Thus, in the series,—

1	2	3	4	5
2	4	8	16	32

If the third and fourth terms, 8 and 16, be multiplied together, the product, 128, will be the seventh term of the series. In like manner, if the fifth term be multiplied into itself, the product will be the tenth term; and if that sum be multiplied into itself, the product will be the twentieth term. Therefore, to find the last, or any other term of a geometric series, it is not necessary to continue the series beyond a few of the first terms.

Previous to the numerical recreations, we shall here describe certain

mechanical methods of performing arithmetical calculations, such as are not only in themselves entertaining, but will be found more or less useful to the young reader.

TO FIND A NUMBER THOUGHT OF.

First Method.

	EXAMPLE.
Let a person think of a number, say	6
1. Let him multiply by 3	18
2. Add 1	19
3. Multiply by 3	57
4. Add to this the number thought of	63

Let him inform you what is the number produced; it will always end with 3. Strike off the 3, and inform him that he thought of 6.

Second Method.

	EXAMPLE.
Suppose the number thought of to be	6
1. Let him double it	12
2. Add 4	16
3. Multiply by 5	80
4. Add 12	92
5. Multiply by 10	920

Let him inform you what is the number produced. You must then, in every case, subtract 320; the remainder is, in this example, 600; strike off the 2 ciphers, and announce 6 as the number thought of.

Third Method.

Desire a person to think of a number—say 6. He must then proceed—

	EXAMPLE.
1. To multiply this number by itself	36
2. To take 1 from the number thought of	5
3. To multiply this by itself	25
4. To tell you the difference between this product and the former	11
You must then add 1 to it	12
And halve this number	6
Which will be the number he thought of.	

Fourth Method.

Desire a person to think of a number—say 6. He must then proceed as follows:

	EXAMPLE.
1. Add 1 to it	7
2. Multiply by 3	21
3. Add 1 again	22
4. Add the number thought of	28

Let him tell you the figures produced (28):

5. You then subtract 4 from it	24
6. And divide by 4	6

Which you can say is the number he thought of.

Fifth Method.

	EXAMPLE.
Suppose the number thought of be	6
1. Let him double it	12
2. Desire him to add to this any number you tell him—say 4	16
3. To halve it	8

You can then tell him, that if he will subtract from this the number he thought of, the remainder will be, in the case supposed, 2.

Note, the remainder is always half of the number you tell him to add.

TO DISCOVER TWO OR MORE NUMBERS THAT A PERSON HAS THOUGHT OF.

First Case.

Where each of the numbers is less than 10. Suppose the numbers thought of were 2, 3, 5.

	EXAMPLE.
1. Desire him to double the 1st number, making	4
2. To add 1 to it	5
3. To multiply by 5	25
4. To add the 2d number	28

There being a 3d number, repeat this process—

5. To double it	56
6. To add 1 to it	57
7. To multiply by 5	285
8. To add the 3d number	290

And to proceed in the same manner for as many numbers as were thought of. Let him tell you the last sum produced (in this case, 290). Then, if there were two numbers thought of, you must subtract 5; if three, 55; if four, 555. You must here subtract 55, leaving a remainder of 235, which are the numbers thought of, 2, 3, and 5.

Second Case.

Where one or more of the numbers are 10, or more than 10, and where there is an *odd* number of numbers thought of.

Suppose he fixes upon five numbers, viz., 4, 6, 9, 15, 16.

He must add together the numbers as follows, and tell you the various sums:

1. The sum of the 1st and 2d..... 10
2. The sum of the 2d and 3d..... 15
3. The sum of the 3d and 4th..... 24
4. The sum of the 4th and 5th..... 31
5. The sum of the 1st and last..... 20

You must then add together the 1st, 3d, and 5th sums, viz., $10 + 24 + 20 = 54$, and the 2d and 4th, $15 + 31 = 46$; take one from the other, leaving 8. The half of this is the first number, 4; if you take this from the sum of the 1st and 2d you will have the 2d number, 6; this taken from the sum of the 2d and 3d will give you the 3d, 9; and so on for the other numbers.

Third Case.

Where one or more of the numbers are 10, or more than 10, and where an *even* number of numbers has been thought of.

Suppose he fixes on six numbers, viz., 2, 6, 7, 15, 16, 18. He must add together the numbers as follows, and tell you the sum in each case:—

1. The sum of the 1st and 2d..... 8
2. The sum of the 2d and 3d..... 13
3. The sum of the 3d and 4th..... 22
4. The sum of the 4th and 5th..... 31
5. The sum of the 5th and 6th..... 34
6. The sum of the 2d and last..... 24

You must then add together the 2d, 4th, and 6th sums, $13+31+24=68$, and the 3d and 5th sums, $22+34=56$. Subtract one from the other, leaving 12; the 2d number will be 6, the half of this; take the 2d from the sum of the 1st and 2d and you will get the 1st; take the 2d from the sum of the 2d and 3d, and you will have the 3d, and so on.

HOW MANY COUNTERS HAVE I IN MY HANDS?

A person having an equal number of counters in each hand, it is required to find how many he has altogether.

Suppose he has 16 counters, or 8 in each hand. Desire him to transfer from one hand to the other a certain number of them, and to tell you the number so transferred. Suppose it be 4, the hands now contain 4 and 12. Ask him how many times the smaller number is contained in the larger; in this case it is three times. You must then multiply the number transferred,

4, by the 3, making 12, and add the 4, making 16; then divide 16 by the 3 *minus* 1; this will bring 8, the number in each hand.

In most cases fractions will occur in the process: when 10 counters are in each hand and if 4 be transferred, the hands will contain 6 and 14.

He will divide 14 by 6 and inform you that the quotient is $2\frac{2}{3}$ or $2\frac{1}{3}$.

You multiply 4 by $2\frac{1}{3}$ which is $9\frac{1}{3}$.

Add 4 to this, making $13\frac{1}{3}$ equal to $\frac{40}{3}$.

Subtract 1 from $2\frac{1}{3}$, leaving $1\frac{1}{3}$ or $\frac{4}{3}$.

Divide $\frac{40}{3}$ by $\frac{4}{3}$, giving 10, the number in each hand.

THE THREE TRAVELLERS.

Three men met at a caravansary or inn, in Persia; and two of them brought their provisions along with them, according to the custom of the country; but the third, not having provided any, proposed to the others that they should eat together, and he would pay the value of his proportion. This being agreed to, A produced 5 loaves, and B 3 loaves, all of which the travellers ate together, and C paid 8 pieces of money as the value of his share, with which the others were satisfied, but quarrelled about the division of it. Upon this the matter was referred to the judge, who decided impartially. What was his decision?

At first sight it would seem that the money should be divided according to the bread furnished; but we must consider that, as the 3 ate 8 loaves, each one ate $2\frac{2}{3}$ loaves of the bread he furnished. This from 5 would leave $2\frac{1}{3}$ loaves furnished the stranger by A; and $3-2\frac{2}{3}=\frac{1}{3}$ furnished by B, hence, $2\frac{1}{3}$ to $\frac{1}{3}=7$ to 1, is the ratio in which the money is to be divided. If you imagine A and B to furnish, and C to consume all, then the division will be according to amounts furnished.

THE MONEY GAME.

A person having in one hand a piece of gold, and in the other a piece of silver, you may tell in which hand he has the gold, and in which the silver, by the following method: Some value, represented by an even number, such as 8, must be assigned to the gold; and a value represented by an odd number, such as three, must be assigned to the silver; after which, desire the person to multiply the number in the right hand by any even number whatever, such as 2, and that in the left by an odd number, as 3; then bid him add together the two products, and if the whole sum be odd, the gold will be in the right hand, and the silver in the left; if the sum be even, the contrary will be the case.

To conceal the artifice better, it will be sufficient to ask whether the sum of the two products can be halved without a remainder; for in that case the total will be even, and in the contrary case odd.

It may be readily seen, that the pieces, instead of being in the two hands of the same person, may be supposed to be in the hands of two persons, one

of whom has the even number, or piece of gold, and the other the odd number, or piece of silver. The same operations may then be performed in regard to these two persons, as are performed in regard to the two hands of the same person, calling the one privately the right, and the other the left.

THE PHILOSOPHER'S PUPILS.

To find a number of which the half, fourth, and seventh, added to three, shall be equal to itself.

This was a favorite problem among the ancient Grecian arithmeticians, who stated the question in the following manner: "Tell us, illustrious Pythagoras, how many pupils frequent thy school?" "One-half," replied the philosopher, "study mathematics, one-fourth natural philosophy, one-seventh observe silence, and there are three females besides."

The answer is, 28: $14+7+4+3=28$.

THE CERTAIN GAME.

Two persons agree to take, alternately, numbers less than a given number, for example, 11, and to add them together till one of them has reached a certain sum, such as 100. By what means can one of them infallibly attain to that number before the other?

The whole artifice in this consists in immediately making choice of the numbers 1, 12, 23, 34, and so on, or of a series which continually increases by 11, up to 100. Let us suppose that the first person, who knows the game, makes choice of 1; it is evident that his adversary, as he must count less than 11, can at most reach 11, by adding 10 to it. The first will then take 1, which will make 12; and whatever number the second may add the first will certainly win, provided he continually add the number which forms the complement of that of his adversary to 11; that is to say, if the latter take 8, he must take 3; if 9, he must take 2; and so on. By following this method he will infallibly attain to 89, and it will then be impossible for the second to prevent him from getting first to 100; for whatever number the second takes he can attain only to 99; after which the first may say—"and 1 makes 100." If the second take 1 after 89, it would make 90, and his adversary would finish by saying—"and 10 make 100." Between two persons who are equally acquainted with the game, he who begins must necessarily win.

THE DICE GUESSED UNSEEN.

A pair of dice being thrown, to find the number of points on each die without seeing them. Tell the person who cast the dice to double the number of points upon one of them, and add 5 to it; then to multiply the sum produced by 5, and to add to the product the number of points upon the other die. This being done, desire him to tell you the amount, and having thrown out 25, the remainder will be a number consisting of two figures, the first

of which, to the left, is the number of points on the first die, and the second figure, to the right, the number on the other. Thus:

Suppose the number of points of the first die which comes up to be 2, and that of the other 3; then, if to 4, the double of the points of the first, there be added 5, and the sum produced, 9, be multiplied by 5, the product will be 45; to which, if 3, the number of points on the other die, be added, 48 will be produced, from which, if 25 be subtracted, 23 will remain; the first figure of which is 2, the number of points on the first die, and the second figure 3, the number on the other.

THE FAMOUS FORTY-FIVE.

How can number 45 be divided into four such parts that, if to the first part you add 2, from the second part you subtract 2, the third part you multiply by 2, and the fourth part you divide by 2, the sum of the addition, the remainder of the subtraction, the product of the multiplication, and the quotient of the division, be all equal?

The first is	8;	to which add 2, the sum is	10
The second is	12;	subtract 2, the remainder is	10
The third is	5;	multiplied by 2, the product is	10
The fourth is	20;	divided by 2, the quotient is	10
	45		

Required to subtract 45 from 45, and leave 45 as a remainder.

SOLUTION.—$9+8+7+6+5+4+3+2+1=45$

$1+2+3+4+5+6+7+8+9=45$

$8+6+4+1+9+7+5+3+2=45$

THE ASTONISHED FARMER.

A and B took each 30 pigs to market. A sold his at 3 for a dollar, B at 2 for a dollar, and together they received $25. A afterwards took 60 alone, which he sold *as before*, at 5 for $2, and received but $24; what became of the other dollar?

This is rather a catch question, the insinuation that the first lot were sold at the rate of 5 for $2, being only true in part. They commence selling at that rate, but after making ten sales, A's pigs are exhausted, and they have received $20: B still has 10 which he sells at "2 for a dollar," and of course receives $5; whereas had he sold them at the rate of 5 for $2, he would have received but $4. Hence the difficulty is easily settled.

THE EXPUNGED FIGURE.

In the first place desire a person to write down secretly, in a line, any number of figures he may choose, and add them together as units; having done this, tell him to subtract that sum fro the line of figures originally set

down; then desire him to strike out any figure he pleases, and add the remaining figures in the line together as units (as in the first instance), and inform you of the result, when you will tell him the figure he has struck out.

76542–24
24
76518

Suppose, for example, the figures put down are 76542; these added together, as units, make a total of 24; deduct 24 from the first line, and 76518 remain; if 5, the centre figure, be struck out, the total will be 22. If 8, the first figure, be struck out, 19 will be the total.

In order to ascertain which figure has been struck out, you make a mental sum one multiple of 9 higher than the total given. If 22 be given as the total, then 3 times 9 are 27, and 22 from 27 show that 5 was struck out. If 19 be given, that sum deducted from 27 shows 8.

Should the total be equal multiples of 9, as 18, 27, 36, then 9 has been expunged.

With very little practice any person may perform this with rapidity; it is therefore needless to give any further examples. The only way in which a person can fail in solving this riddle is, when either the number 9 or a 0 is struck out, as it then becomes impossible to tell which of the two it is, the sum of the figures in the line being an even number of nines in both cases.

THE MYSTERIOUS ADDITION.

It is required to name the quotient of five or three lines of figures—each line consisting of five or more figures—only seeing the first line before the other lines are even put down. Any person may write down the first line of figures for you. How do you find the quotient?

86,214
42,680
57,319
62,854
37,145
286,212
67,856
47,218
52,781
167,855

When the first line of figures is set down, subtract 2 from the last right-hand figure, and place it before the first figure of the line, and that is the quotient for five lines. For example, suppose the figures given are 86,214, the quotient will be 286,212. You may allow any person to put down the two first and the fourth lines, but you must always set down the third and fifth lines, and in doing so always make up 9 with the line above.

Therefore in the annexed diagram you will see that you have made 9 in the third and fifth lines with the lines above them. If the person you request to put down the figures should set down a 1 or 0 for the last figure, you must say, "We will have another figure," and another, and so on until he sets down something above 1 or 2.

In solving the puzzle with 3 lines, you subtract 1 from the last figure, and place it before the first figure, and make up the third line yourself to 9. For example: 67,856 is given, and the quotient will be 167,855, as shown in the above diagram.

THE REMAINDER.

A very pleasing way to arrive at an arithmetical sum, without the use of either slate or pencil, is to ask a person to think of a figure, then to double it, then add a certain figure to it, now halve the whole sum, and finally to subtract from that the figure first thought of. You are then to tell the thinker what is the remainder.

The key to this lock of figures is, that *half* of whatever sum you request to be added during the working of the sum *is the remainder*. In the example given, 5 is the half of 10, the number requested to be added. Any amount may be added, but the operation is simplified by giving only even numbers, as they will divide without fractions.

Think of	7
Double it	14
Add 10 to it	10
Halve it	2)24
Which will leave	12
Subtract the number thought of	7
The remainder will be	5

THE THREE JEALOUS HUSBANDS.

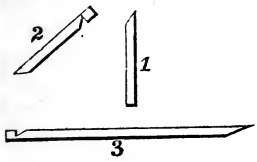
Three jealous husbands, A, B, and C, with their wives, being ready to pass by night over a river, find at the water-side a boat which can carry but two at a time, and for want of a waterman they are compelled to row themselves over the river at several times. The question is, how those six persons shall pass, two at a time, so that none of the three wives may be found in the company of one or two men, unless her husband be present?

This may be effected in two or three ways; the following may be as good as any: Let A and wife go over—let A return—let B's and C's wives go over—A's wife returns—B and C go over—B and wife return, A and B go over—C's wife returns, and A's and B's wives go over—then C comes back for his wife. Simple as this question may appear, it is found in the works of Alcuin, who flourished a thousand years ago, hundreds of years before the art of printing was invented.

THE ARITHMETICAL MOUSE-TRAP.

One of the best and most simple mouse-traps in use may be constructed as follows: Get a slip of smooth pine, about the eighth of an inch thick, a quarter of an inch broad, and of sufficient length to cut out the following parts of a trap: First, an upright piece, three or four inches high, which must be square at the bottom, and a small piece to be cut off at the top to

fit the notch in No. 2 (see No. 1, in the margin). The second piece must be of the same length as the first, with the notch cut across nearly at the top of it, to fit the top of No. 1, and the other end of it trimmed to catch the notch in No. 3 (see No. 2). The third piece should be twice as long as either of the others; a notch, similar to that in No. 2, must be cut in one end of it to catch the lower end of No. 2. Having proceeded thus far, you must put the pieces together, in order to finish it, by adding another notch in No. 3, the exact situation of which you will discover as follows: Place No. 1, as it is in the cut, then put the notch of No. 2 in the thinned top of No. 1; keep it in the same inclination as in the cut; then get a flat piece of wood, or a slate, one end of which must rest on the ground, and the centre of the edge of the other on the top of No. 2. You will now find the thinned end of No. 2 elevated by the weight of the flat piece of wood or slate; then put the thinned end of it in the notch of No. 3, and draw No. 2 down by it, until the whole forms a resemblance of a figure 4; at the exact place where No. 3 touches the upright, cut a notch, which, by catching the end of No. 1, will keep the trap together. You may now bait the end of No. 3 with a piece of cheese; a mouse, by nibbling the bait, will pull down No. 3, the other pieces immediately separate, and the slate or board falls upon the mouse. We have seen numbers of mice, rats, and birds, caught by this



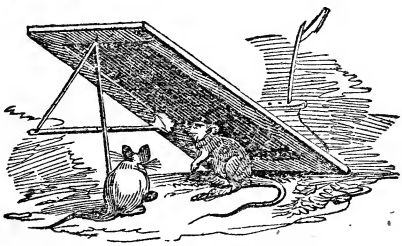


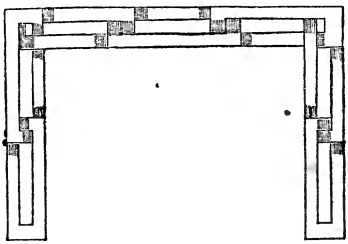
FIGURE OF 4 TRAP.

PUZZLES.

To many minds, the pleasure of making a discovery, after long and patient investigation, is greater than any delight that can be offered to the senses. Puzzles may be regarded as an excellent medium for the development of such natural tendencies in youth, combining, as they do, the elements of work and play; necessitating also both application and perseverance, and enabling us to improve the valuable faculty of holding several ideas in the mind at once. In short, the same powers of intellect that will enable a boy to unravel the intricacies of a puzzle, might, later in life, prove, in their fullest development, valuable aids to the investigation of the mysterious problems of Nature, and yield, for their fruits, some fresh contributions to the never-ceasing wonders of Science. For centuries, puzzles, paradoxes, and riddles, have been popular as recreations. Those that we place before our readers in the following pages, have been carefully collected from several sources; the answers we have placed in a separate chapter, so that our young friends may have the chance of deciphering them for themselves, instead of being directly enlightened by the printed solutions.

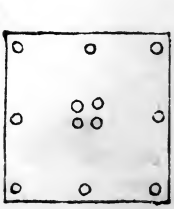
1.—THE CARD-CHAIN PUZZLE.

The links of which this chain is formed have no joints, neither was any



gum, paste, nor adhesive material used in their formation; but they were all fairly cut from a single card. Our young friends will find this one of the most ingenious puzzles in this collection.

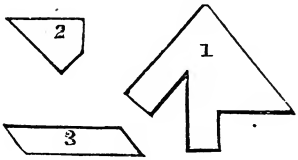
2.—THE SQUARE AND CIRCLE PUZZLE.



Get a piece of cardboard, the size and shape of the diagram, and punch in it twelve circles, or holes, in the position shown. The puzzle is, to cut the cardboard into four pieces of equal size, each piece to be of the same shape, and to contain three circles, without cutting into any of them.

3.—THE MAGIC OCTAGON.

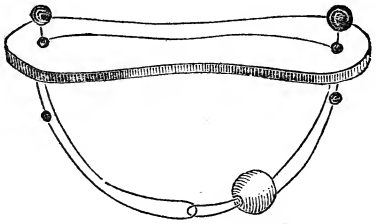
Procure a good stiff piece of pasteboard, and draw *four each* of the three



designs represented in the accompanying diagram. If joined together correctly, they will form an octagon.

4.—THE BOARD AND BALL.

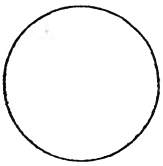
Get the cover of a small cigar-box, or any other thin board, about five inches long, and cut it out the shape of the engraving. Then arrange the strings and balls as shown in the same.



The trick is, to get the large ball off the string without untying it, or removing any of the smaller balls.

5.—THE CABINET-MAKER'S PUZZLE.

A cabinet-maker has a circular piece of veneering, with which he has to veneer the tops of two oval stools; but it so happens that the area of the



stools, exclusive of the hand-holes in the centre, and that of the circular piece, are the same. How must he cut his stuff so as to be exactly sufficient for his purpose?

6.—THE PROTEAN PUZZLE.

Cut a piece of stiff cardboard in the shape of Fig. 1. Let it be about five inches long, by one inch broad. Cut it then into eleven pieces, and with these eleven pieces form a cross. After this, by changing the positions of the pieces, form in turn the several shapes in Fig. 2.

Fig. 1.

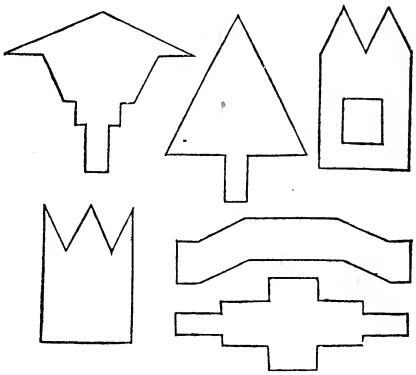


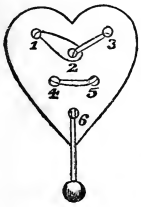
Fig. 2.

7.—THE BUTTON PUZZLE.

In the centre of a piece of leather make two parallel cuts with a penknife, and just below a small hole of the same width; then pass a piece of

string under the slit and through the hole, as in the figure, and tie two buttons much larger than the hole to the ends of the string. The puzzle is, to get the string out again without taking off the buttons.

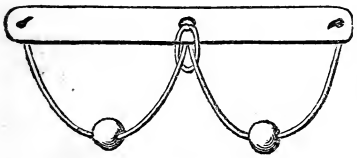
8.—THE HEART AND BALL PUZZLE.



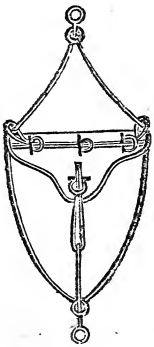
To make this puzzle it is only necessary to cut a thin piece of wood into the shape of a heart, to make six holes in it, as represented in the annexed cut, and provide a thin silken cord, which is to be doubled, and the two ends fastened into a small wooden ball. To play the ball on, pass the loop through the hole 6, from face to back, up to 2, through which bring it, and then through 3, 5, 4, and 1, in succession; then through 2 again, and down the back to 6; bring it through 6 to the face, and pass it over the ball; then draw the loop back again through 6 and 2, and the puzzle (which is to take the ball and string off after being thus fixed) is set.

9.—THE STRING AND BALLS PUZZLE.

Get an oblong strip of wood or ivory, and bore three holes in it, as shown in the cut. Then take a piece of twine, passing the two ends through the holes at the extremities, fastening them with a knot, and thread upon it two beads or rings, as depicted above. The puzzle is, to get both beads on the same side, without removing the string from the holes, or untying the knots.



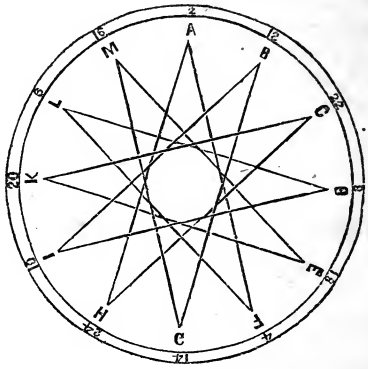
10.—PUZZLE PURSE.



With a piece of morocco, or any other suitable material, let a purse be constructed similar to the one given here. The puzzle is, to open the same without removing any of the rings.

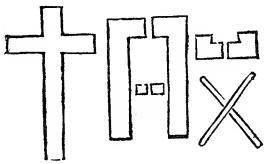
11.—THE TWELVE-CORNERED STAR.

The circle represented in the cut, is divided at the twelve points, A, B, C, D, E, F, G, H, I, K, L, M, by lines so drawn that they form a star with twelve points. From the point A, draw a line to F, from F to L, to D, to I, to B, to G, to M, to E, to K, to C, to H, and back again to A.



The problem now to be solved, is how to distribute the twelve numbers of the following arithmetical progression 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, into the twelve compartments of the twelve letters which stand at the twelve points of the star in such a manner, that the sum of any two numbers that lie side by side, when added together, shall be equal to the sum of the two numbers which are at the two opposite points of the star.

12.—CUTTING OUT A CROSS.



How can be cut out of a single piece of paper, and with one cut of the scissors, a perfect cross, and all the other forms as shown in the cuts?

13.—THE CIRCLE PUZZLE.

Twenty lines upon paper place,
On every line five circles trace;
These circles should just in amount,
Or number, thirty-seven count;
And every circle, orb, or round,
Upon an angle should be found—
At an equal distance, too, should be
Upon each line—solve this for me.

14.—THE CARD PUZZLE.

One of the best puzzles hitherto made, is represented in the annexed cut. A is a piece of card; *b b*, a narrow slip divided from its bottom edge, the whole breadth of the card, except just sufficient to hold it on at each side; *c c* is another small slip of card, with two large square ends, *e e; d* is a bit of tobacco-pipe, through which *c c* is passed, and which is kept on by the two ends, *e e*. The puzzle consists in getting the pipe off without breaking it or injuring any other part of the puzzle. This, which appears to be impossible, is done in the most simple manner. On a moment's consideration, it will appear plainly that there must be as much difficulty in getting the pipe in its present situation as there can be in taking it away. The way to put the puzzle together is as follows: The slip *c c e e* is cut out of a piece of card, in the shape delineated in Fig. 3. The card in the first figure must then be gently bent at A, so as to allow of the slip at the bottom of it being also bent sufficiently to pass double through the pipe, as in Fig. 2. The detached slip with the square ends (Fig. 3) is then to be passed half way through the loop *f*, at the bottom of the pipe; it is next to be doubled in the centre, at *a*, and pulled through the pipe, double, by means of the loop of the slip to the card. Upon unbending the card, the puzzle will be complete, and appear as represented in Fig. 1.

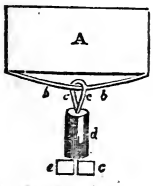


Fig. 1.

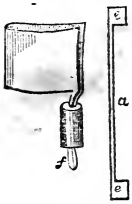
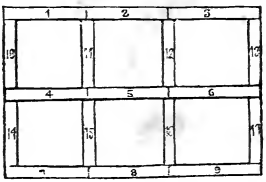


Fig. 2. Fig. 3.

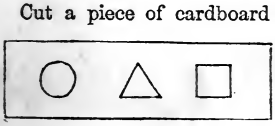
15.—THREE-SQUARE PUZZLE.



Cut seventeen slips of cardboard, of equal lengths, and place them on a table to form six squares, as in the diagram. It is now required to take away five of the pieces, yet to leave but three perfect squares.

16.—THE CYLINDER PUZZLE.

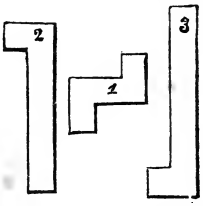
Cut a piece of cardboard about four inches long, of the shape of the diagram, and make three holes in it, as represented. The puzzle is, to make one piece of wood to pass through, and also exactly to fill, each of the three holes.



17.—THE FLORIST'S PUZZLE.

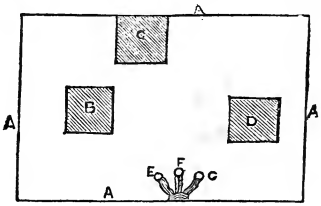
A florist planted thirty-one varieties of flowers (only one of each kind), so that he had one circle containing eighteen varieties; seven circles with six varieties in each; six straight rows with six varieties in each; and three straight rows with six varieties in each.

18.—ROMAN CROSS-PUZZLE.



With three pieces of cardboard, of the shape and size of No. 1, and one each of Nos. 2 and 3, to form a cross.

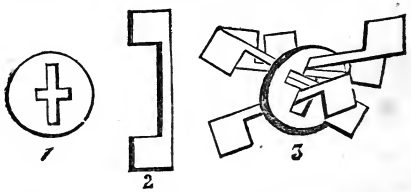
19.—THE FOUNTAIN PUZZLE.



A is a wall, B C D three houses, and E F G three fountains or canals.

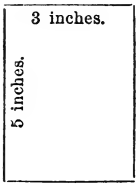
It is required to bring the water from E to D, from G to B, and from F C, without one crossing the other, or passing outside of the wall A.

20.—THE DOUBLE-HEADED PUZZLE.



Cut a circular piece of wood, as in the cut No. 1, and four others, like No. 2. The puzzle consists in getting them all into the cross-shaped slit, until they look like Fig. 3.

21.—THE CARDBOARD PUZZLE.



Take a piece of cardboard, or leather, of the shape and measurement indicated by the diagram; cut it in such a manner that you yourself may pass through it, still keeping it in one piece.

22.—THE PERPLEXED CARPENTER.

There is a hole in the barn floor, just two feet in width and twelve in length. How can it be entirely covered with a board three feet wide and eight feet long, by *cutting the board only once in two?*

23.—THE TRIANGLE PUZZLE.

Cut twenty triangles out of ten square pieces of wood; mix them together, and request a person to make an exact square with them.

24.—THE CARPENTER'S PUZZLE.

A plank was to be cut in two; the carpenter cut it half through on each side, and found he had two feet still to cut. How was it?

25.—THE NINE DIGITS.

Place the nine digits (that is, the several figures or numbers under ten) in three rows, in such a way that, adding them together either up or down, across, or from corner to corner, they shall always make fifteen.

26.—THE ACCOMMODATING SQUARE.

Make eight squares of card, then divide four of them from corner to corner, so that you will now have twelve pieces. Form a square with them.

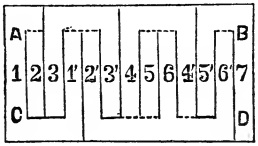
27.—THE THREE RABBITS.

Draw three rabbits, so that each shall appear to have two ears, while, in fact, they have only three ears between them.

ANSWERS TO PUZZLES.

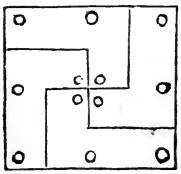
1.—ANSWER TO CARD-CHAIN PUZZLE.

TAKE a card, say four inches long and two and a half inches wide, or of any other size thought fit; but the larger the card the better it is for practice. Draw a light pencil-line from A to B, and another line from C to D, at about a quarter of an inch from the edge of your card. Now lay the card in water for a short time; after which split it down from the edge with a penknife, as far as the pencil-line, and then put the card aside until it is perfectly dry, when you will resume your task as follows: With a sharp penknife cut right through the *straight* lines indicated in the en-



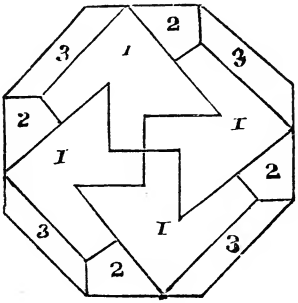
graving, but only half way through the *dotted* lines, as that is the *split* portion of the card. The figures show the bar of each link of the chain. Thus 1 and 1′ belong to the same link, and are connected at the top and bottom, the latter by the upper half of the split, and the former by the under half of the split; the links 2 and 2′ are also connected in the same way, and so on to the end of the chain, until every link is released, thus forming a cable, which, if not useful for any mechanical purpose, will at least serve to amuse.

2.—ANSWER TO SQUARE AND CIRCLE PUZZLE.



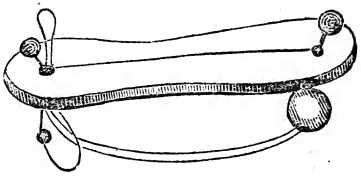
3.—ANSWER TO THE MAGIC OCTAGON.

The pieces are put together in the following manner:



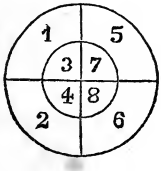
4.—ANSWER TO BOARD AND BALL PUZZLE.

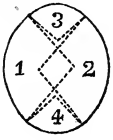
Push the ball close up to the wood, and pull the loop of string down through, as much as it will come; then pass the end of the loop through the hole in the wood and over the pellet, as here shown. The two loops will then separate, and the ball can easily be taken off.



The knots beneath the wood prevent the loops being pulled through by the pellets.

5.—ANSWER TO THE CABINET-MAKER'S PUZZLE.

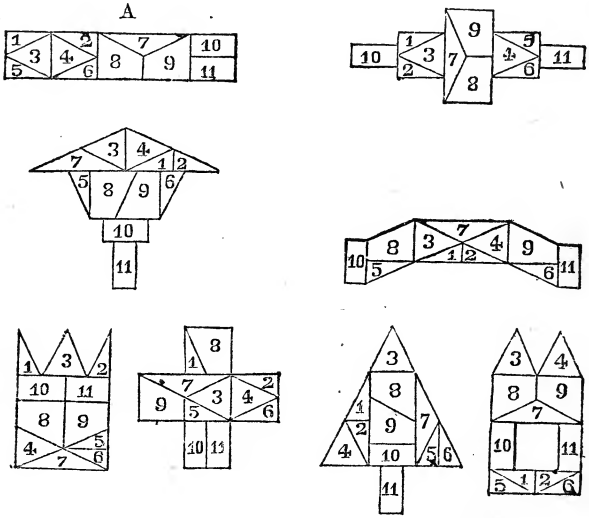




The cabinet-maker must first find the centre of the circle, and strike another circle, half the diameter of the first, and having the same centre. Then cut the whole into four parts, by means of two lines drawn at right angles to each other; then cut along the inner circle, and put the pieces together as in the above diagram.

6.—ANSWER TO THE PROTEAN PUZZLE.

Cut the cardboard as in Fig. A, and with the pieces the different diagrams may be formed.

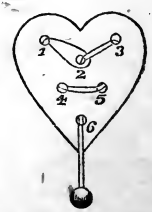


7.—ANSWER TO THE BUTTON PUZZLE.

Draw the narrow slip of the leather through the hole, and the string and buttons may be easily released.

8.—ANSWER TO HEART AND BALL PUZZLE.

To play the ball off, place the heart before you in the position described by the cut; slacken the string by drawing at the back, the ball toward the hole 6; then loosen the rest of the string by pulling it toward you, and draw up the loop as far as you can; then pass the loop through hole 2, down the other side of the heart to 6, through which bring it to the face, and pass it over the ball; then draw the loop back again through the same hole, and the ball and the string will come off. Care should be taken to avoid twisting or entangling the string. The length of the string should be proportioned to the size of the heart; if you make the heart two inches and a half high the string, when doubled, should be about nine inches long.



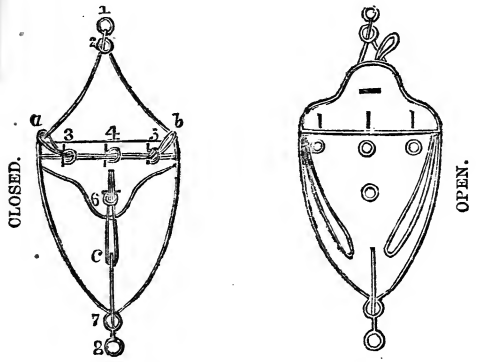
9.—ANSWER TO THE STRING AND BALLS PUZZLE.

Draw the loop well down, slipping either ball through it. Push it through the hole at the extremities, pass it over the knot, and draw it through again. The same process must be repeated with the other ball; the loop can then be drawn through the hole in the centre, and the ball will slide along the cord until it reaches the other side. The string is then replaced, having both balls on the same side.

There is another and perhaps a neater way of performing this trick. Draw the loop through the central hole, and bring it through far enough to pass one of the balls through. Having done this, draw the string back, and both balls will be found on the same side.

10.—ANSWER TO PURSE PUZZLE.

Pass loop *a* up through ring No. 2, and over No. 1; then pass loop *b* over rings 1 and 2 up through No. 2, and over No. 1, as before; when the same



may be easily drawn through rings 3, 4, 5. Again pass loop *c* through ring No. 7 over 8, draw it up through ring 6, and the purse is complete.

11.—ANSWER TO TWELVE-CORNERED STAR.

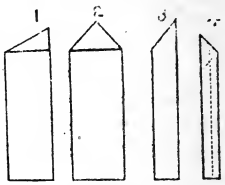
This singular arrangement of the numbers is effected in the following manner: Place No. 2 over the ring which encloses the letter A, 4 over F, 6 over L, 8 over D, 10 over I, and so on, and the numbers will then be distributed as appears in engraving, page 547.

You may now take any two numbers that lie side by side, and add them together, and their sum will always be equal to the sum of the two numbers found at the opposite points of the star.

For example, the sum of the two Nos. 14 and 4, which cover the letters

G and F, is 18, and so also is the sum of the numbers 16 and 2, which are placed over the opposite letters M and A. The same is the case with every other pair of numbers and their opposites.

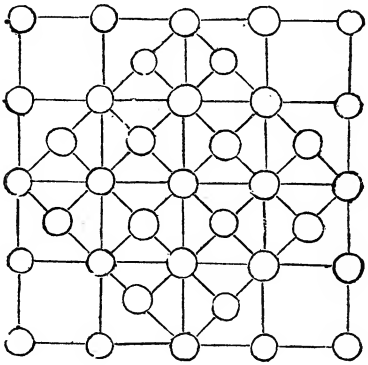
12.—ANSWER TO CUTTING OUT A CROSS-PUZZLE.



Take a piece of writing-paper, about three times as long as it is broad—say six inches long and two wide. Fold the upper corner down, as shown in Fig. 1; then fold the other upper corner over the first, and it will appear as in Fig. 2; you next fold the paper in half, lengthwise, and it will appear as in Fig. 3. Then the last fold is made lengthwise, also, in the middle of the paper, and it will exhibit the form of Fig. 4, which, when cut through with the scissors, in the direction of the dotted line, will give all the forms mentioned.

13.—ANSWER TO THE CIRCLE PUZZLE.

The lines and circles must be traced as in the following diagram:



14.—ANSWER TO THE CARD PUZZLE.

In order to take the pipe off, the card must be doubled (as in Fig. 2), the slip passed through it, until there is sufficient of the loop below the pipe to allow one of the square ends of the slip (Fig. 3) being passed through it. Fig. 3 is then to be taken away, and the pipe slipped off. The card for this puzzle must be cut very neatly, the puzzle handled gently, and great care taken that, in doubling the card to put on the pipe, no creases are made in it, as they would, in all probability, spoil your puzzle, by betraying to an acute spectator the mode of operation.

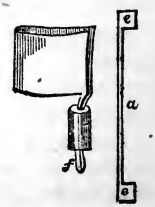


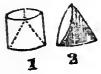
Fig. 2. Fig. 3.

15.—ANSWER TO THE THREE-SQUARE PUZZLE.

Take away the pieces numbered 8, 10, 1, 3, 13, and three squares only will remain.

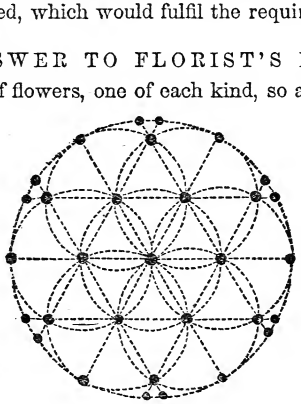
16.—ANSWER TO THE CYLINDER PUZZLE.

Take a round cylinder of the diameter of the circular hole, and of the height of the square hole. Having drawn a straight line across the end, dividing it into two equal parts, cut an equal section from either side to the edge of the circular base; a figure like that represented by the wood-cut in the margin would then be produced, which would fulfil the required conditions.



17.—ANSWER TO FLORIST'S PUZZLE.

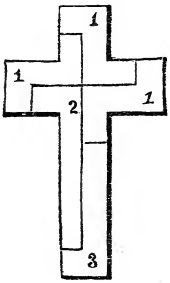
To plant 31 kinds of flowers, one of each kind, so as to have 18 varieties



in one circle; 7 circles with 6 varieties in each; 6 straight rows with 6 varieties in each, and 3 straight rows with 5 varieties in each.

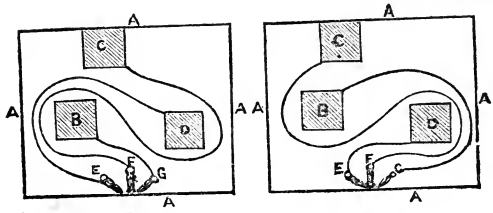
This will make a pretty flower-bed if smaller plants are put where they come nearest together.

18.—ANSWER TO ROMAN CROSS PUZZLE.



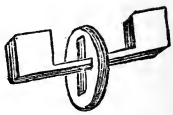
The above diagram will explain to our juvenile friends the puzzling paradox of the Roman Cross.

19.—ANSWER TO FOUNTAIN PUZZLE.



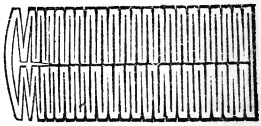
20.—ANSWER TO DOUBLE-HEADED PUZZLE.

Arranging them side by side in the short arms of the cross, draw out the centre-piece, and the rest will follow easily. The reversal of the same process will put them back again.



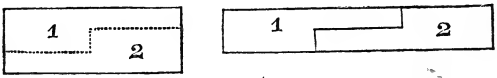
21.—ANSWER TO CARDBOARD PUZZLE.

Double the cardboard or leather lengthways down the middle, and then cut first to the right, nearly to the end (the narrow way), and then to the left, and so on to the end of the card; then open it, and cut down the middle, except the two ends. The diagram shows the proper cuttings. By opening the card or leather, a person may pass through it. A laurel leaf may be treated in the same manner.



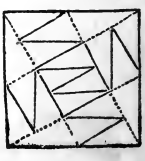
22.—ANSWER TO PERPLEXED CARPENTER

The board was cut after the manner of the annexed diagram:



23.—ANSWER TO TRIANGLE PUZZLE.

The solution of this puzzle may be easily acquired by observing the dotted lines in the engraving; by which it will be seen that four triangles are to be placed at the corners, and a small square made in the centre. When this is done, the rest of the square may be quickly formed.



24.—ANSWER TO THE CARPENTER'S PUZZLE.

The plank was to be cut in this way:

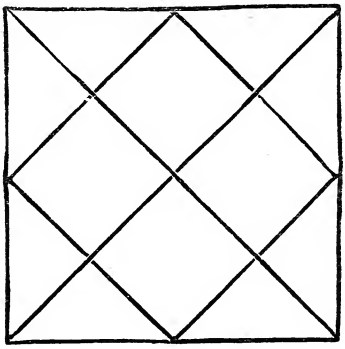
25.—ANSWER TO THE NINE DIGITS.

Arrange the figures as explained in the following diagram:

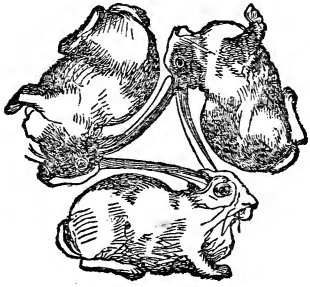
15	6	7	2
15	1	5	9
15	8	3	4
	15	15	15	15

26.—ANSWER TO THE ACCOMMODATING SQUARE.

The square is composed in the following manner:



27.—ANSWER TO THE THREE RABBITS.



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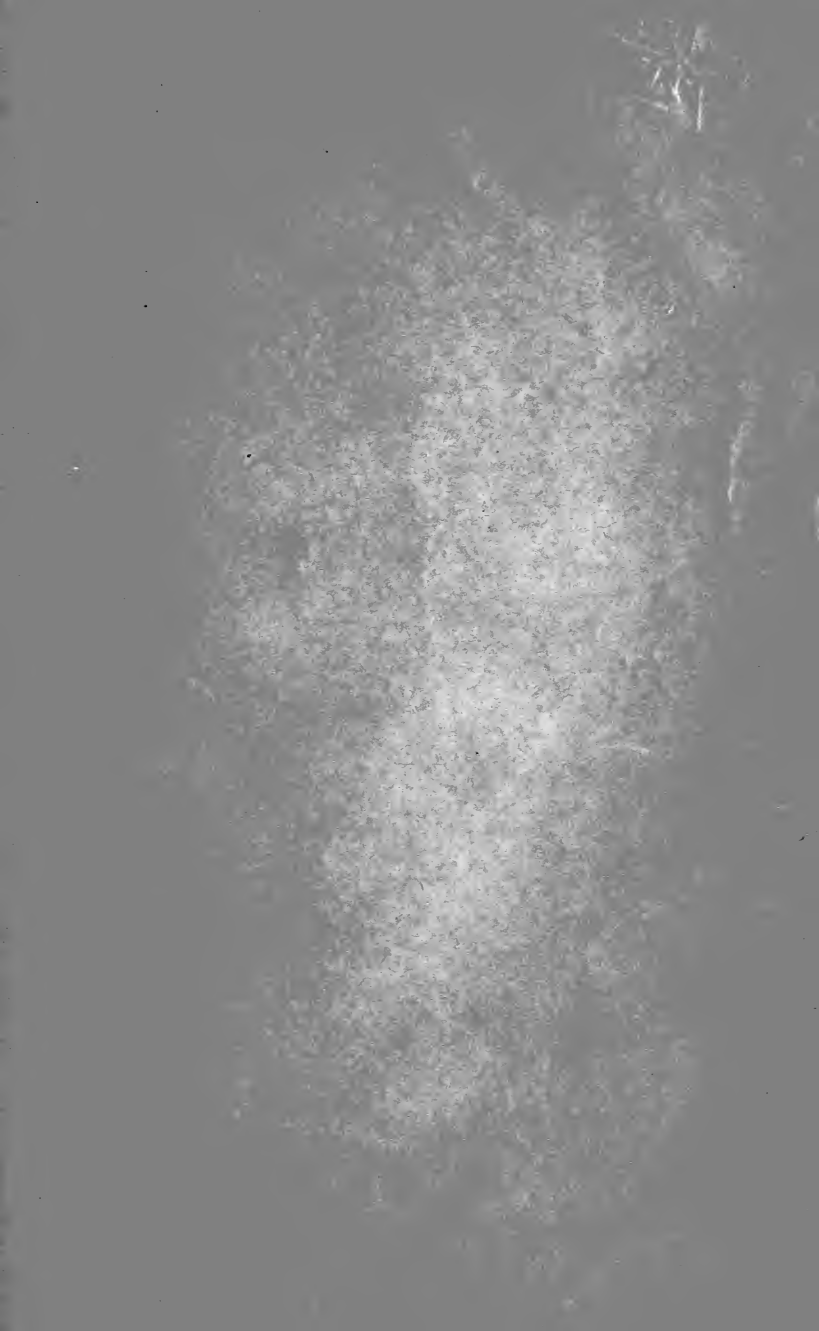

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